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The introduction of Wordcraft 20 for the VIC brings the benefits and advantages of full scale word processing directly to the general public.

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Wordcraft 20 comes on a cartridge ready to plug into the back of the VIC. Included in the cartridge is an extra 8K of RAM that is also available for use with other programs — so not only do you get a word processor but you also get a memory expansion thrown in. The system also comes with complete documentation catering both for the inexperienced user and for those already familiar with Wordcraft 80.

Just look at these features:

- * Full use of colour and sound.
- ★ Full compatibility with VIC 1515 printer, parallel printers or RS232C serial printers.
- * Full control over margins, document width, tab

stops, decimal tabs, justified output, multiple copies. Complete control of the final output.

- * Automatic underlining and emboldening.
- ★ Full screen display with automatic paging.
- ★ Full storage and retrieval facilities from disk and tape.
- * Full compatibility with Wordcraft 80.
- ★ Name and address capabilities including labels.
- * Full document merging facilities.

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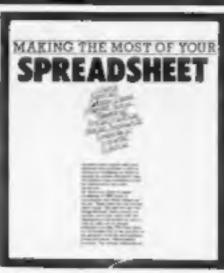
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COVER STORY

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FRONTLINE

Home to Business

In the beginning there were the three: PET, Apple and Tandy. And they knew no distinction between home and business, for the world of personal computing was a new creation and everything lived in harmony. Then came the voice of the tempter, "Come, there is much fruit to be had in the business sector," and to others, "See, there is a whole home market waiting to be your servant." So new generations were born – and so began the great divide....

And there, if you'll excuse the allegory above, we have it. The microcomputer market is now a dichotomy. From the moment you first make contact with it, whether through books, magazines, advertisements or even the purchase of a machine, you will be herded into one of two pens, and branded accordingly: 'home user' or 'business user'.

The original concept of the personal computer was nothing more or less than 'one man – one machine'. It didn't matter whether you wanted to peruse an adventure game, or process your accounts receivable, the principles of personal computing were the same. The 'great divide' has come about largely because of developments in hardware design. 'Home computers' have become cheaper, more colourful and game-oriented, whilst business systems have moved up market with the advent of 16-bits, larger memories and ergonomic design. This trend is both inevitable and beneficial to the consumer.

The corollary, however, is that it is becoming increasingly difficult for anyone to learn about business computing by having a computer at home. There are several reasons why this might be desirable. First, might be a desire to learn about computing in the privacy of your own home, rather than face possible embarrassment on a company training course. Second, a desire to get ahead by showing initiative. Third, is the idea of taking up an interesting hobby that might just end up being useful and, er, tax deductable. Finally, in the case of a small trader, the incentive of expanding the hardware to run his business.

In the new series 'Home to Business' starting this month, we shall be looking at the whole question of "How much can you learn about business computing with a home micro?" We'll be looking in detail at both hardware and software – and new developments such as the exciting Commodore '64 which will help to bridge the gap between home and business computing. This month we kick off with an introduction to the subject followed by an intensive case study on the Atari 800.

At MicroComputer Printout we are hoping to reverse a trend and get back to the concept of the personal computer whether at use in the home or the business.

P.S.

Next month we shall be having quite a lot of fun – to coincide with the festive season. In Desert Island Disks, Terry Hope will be introducing the ten programs he would most like to be stranded with on an island; Humphrey Waiwyn will be looking ahead at personal computing in 20 years time, and there might even be some serious stuff if the editorial team can keep sober long enough to write it.

P.P.S.

Please do fill in and return the Reader Feedback Card stapled in this issue. The collated information will be a great help in planning future issues.



Alle

Richard Pawson - Editor



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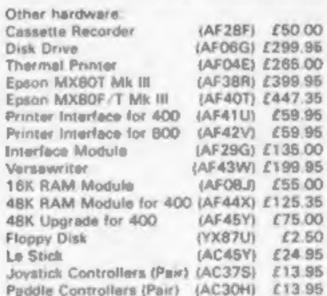
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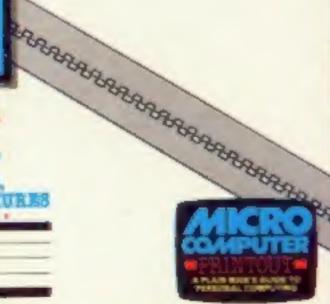


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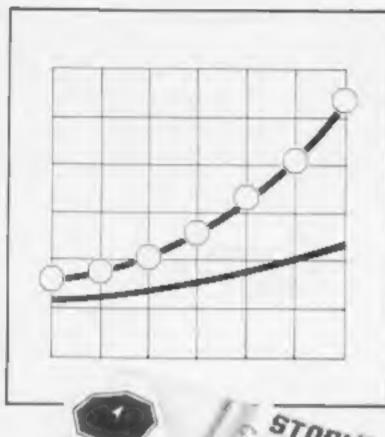


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STATE OF THE PERSON NAMED IN COLUMN TO SERVICE OF THE PERSON NAMED IN COLUMN T

First of all a big thank you to the many readers who entered our 'Win a Commodore 64 Competition' As always, the process of deciding on a winner, and eliminating a great many worthy entries, was extremely difficult.

For those who didn't see the original entry form - we asked readers to suggest a new application for a computer in the home. You didn't have to write the program, just describe what it would do in less than 200 words. Reading through several hundred entries, if was not surprising that most of the ideas cropped up several times, but in general, the standard of the entries was very high

How did we judge it? Well, originality was our first consideration, so we miled out those entries that were merely rehashes of existing programs. A great many submissions concerned diet planning, for example, and we have to say that this idea is as old as microcomputing itself, but has never proven successful.

Next came imagination. What we wanted was an idea that wasn't bounded by the current scope of computer programs. At the same time it had to be feasible - some of the entries would have needed a CRAY I to run successfully!

We considered the genuine usefulness and wideness of appeal of the program.

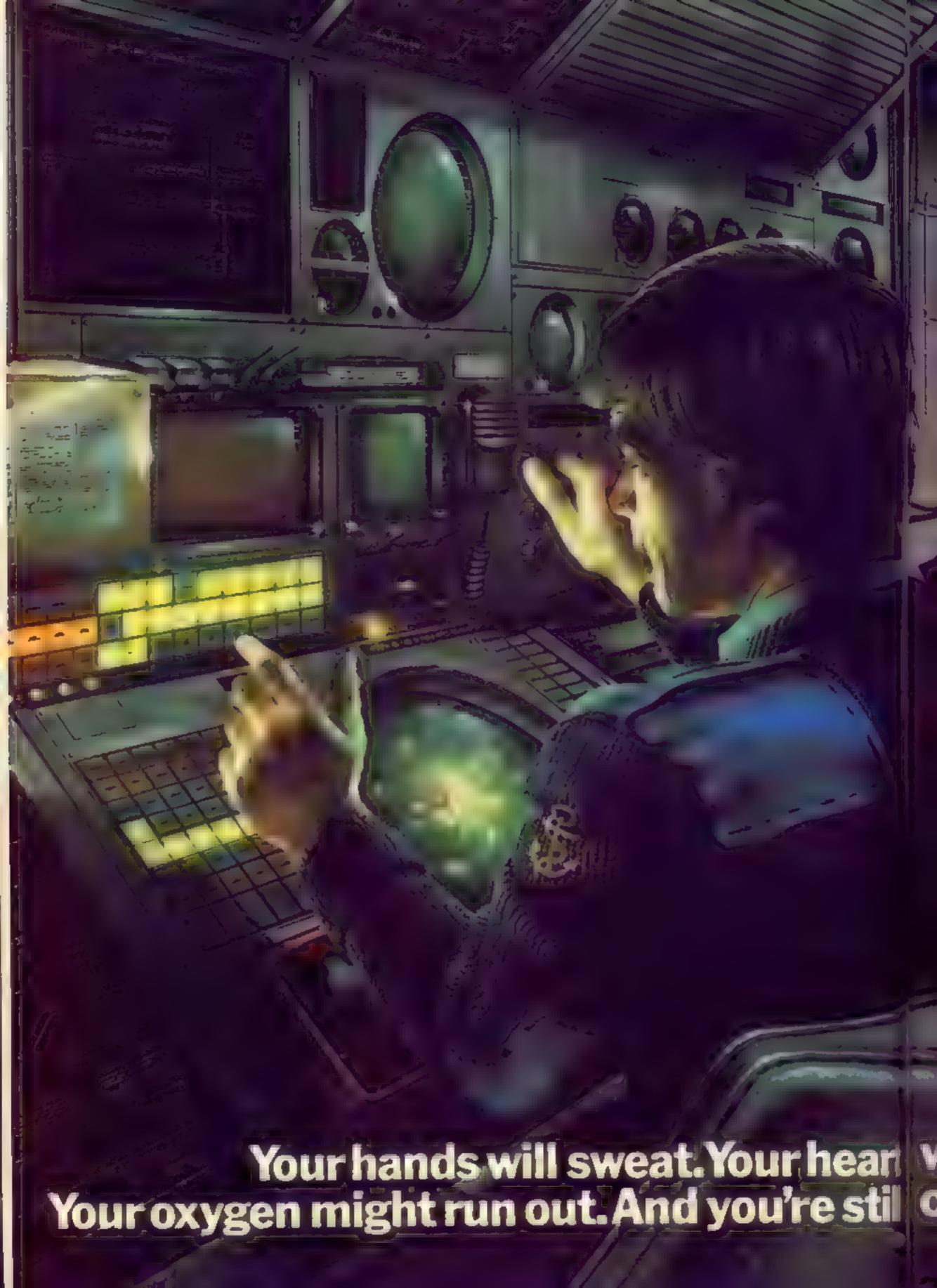
Commodore Competition Results

THE WINNER

After careful consideration, the judges chose the Home Health Program idea submitted by Mr S. Quigley - who will receive one of the first Commodore 64s to be produced for this country. Though Mr. Quigley's was only one of several Home Health ideas to be submitted, the nidges considered that his was the most imaginative and versatile. We would like to point out that diagnosis by computer, even of minor illnesses, is too risky from a legal view point, though it is possible to give general advice such as 'Drink plenty of fluids, keep warm and check temperature every four hours', for example

Our congratulations, then, to Mr. Ougley and commiserations to several hundred numers-up for some very worthy suggestions.

Using the computer's memory to stone family medical records past illnesses, allergies, vaccinations and so on, would be invaluable to a docter making house. The computer could be used as a diary of medical/dental appointments, list lateauty chemists and surgery hours. As a stock-heaper the computer would ensure that If anyone feels the coming on, the computer could give a diagnosis and possible the family supplies of plasters and landages are never depleted. remedies (only for years simple problems), and basic courses in first aid would Le educational for example, treatment of electric shocks could be demonstrated with the committee of a country of the country A weekly home-physical on all the family could be used to check on their wellbeing. Heart-rate, blood pressure and temperature could be used along with age. weight and sex, to give a "fitness quotient", and a curve plotted with the results, with the computer's graphics. Exercise courses run by the computer might be the answer to weight/fitness incidently, the home-health program is intended to aid the doctor, not replace him. problems, and healthy diets only a button-push away. perhaps using biorythyms. Admittedly a menu is needed so that a suite of programs isn't. Entry submetted by: Doncaster. South Yorkshire. DN4 6TL





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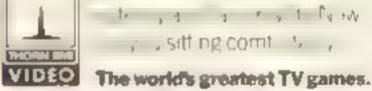
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READ/WRITE

Needle stuck

From the tone of the letter entitled 'Soap Opera', published in your September issue, and the comment following it it is obvious that there is some mis-understanding of ICLs role in the manufacture of the Acoin com, fer Hence the Director if Cus Suchry Division has written the affacted letter and we would appreciate tit you would publish tima forthrowing issue as a means of putting the error tis faight.

K.G. Hillwe Chief Merit a Relations Officer In ernational Compiliers Ltd Putrity SW15-15W

For Publication in MicroComputer Printout Dear Sir

I would like to correct some misconceptions which have arisen regarding ICLs role in the production of the Acorn computers, commonly known as the BBC micro

ICL has undertaken to produce printed circuit boards for inclusion in the micro and is one of several companies which assembles and tests it using components supplied by Acomcomputers

ICL has already produced 17,500 units, of which the majority are Model Bs, and has just signed a second agreement to produce a further 12,500 over the next six months.

Materials supply and design engineering problems outside tCLs control affected the rate of production earlier this year, but both ICL and Acom management are confident that the improvement achieved in recent weeks will be maintained throughout the duration of the new contract.

C W Beaumont Director of Supply Division, ICL

Yawni Oh really

DALLAS

I just lead the August 1982 issue of your wonderful publication called *MicroComputer Printout*—wish to commend you on the high standard of the work!

However my comment siths why are there so many articles and advertisements on the Commodore viC 20 (PET). As lown a TI 99 4A and am a very keen micro computerist, would you be able to include more articles on the TI 99 4A? Would you also let me know whether in your previous issues there are any articles reviews as TI 99 4A. should like Tipossible to build have any back issues.

Peter Lan Singapore

interestingly enough, MicroComputer Printout was one of the few magazines to rate the T-99-4A as good value for money at its original price of £299 (our full review appeared in the May 1982 issue). Now that if can be obtained in the UK for as little as £150 we would strongly recommend if to any first time buyer.

The reason why allie is seen of the '99 in the press is very interesting and relates directly to his marketing. The '99 is soid as a complete package documentation is excellent, and the BASIC has good commands to handle all its soph stir ated features. But there is no across to the machine at system level it elimanthine code. These two factors have meant that there is little need or scripe for additional documentation, and more important. The '99 is not a machine that appeals to the technical enthics as

Furthermore Theing a staid and reputable company deal only with staid and reputable dealers. They generally do supply per pherais when they say they will and have a complete range available in contrast to say) the victure 99 does not rely on activity in the marketpiace as a strong setting point. It have not activity encouraged the setting of software and hardware add-ons by third party supplies thence a lack of advertising.

This whole area of the activity surrounding a micro is one that we shall return to in a later article. Another contributing factor is that up to now sales of the 99 have been very limited. The rement price drops, however, should do a lot to change this situation.

FORTH right advice

It was with great interest that I read of your editional policy with regards FORTH in Lindsay Dovle's article 'Six months with a robot (Oct '82) A brief description of the Jupiter Ace appearing in the same issue (Hotline) again puts FORTH under the spot ight

Stimulated by Mr. Doyle's plea for phone calls, expressing a wish for a change of policy write this letter, which will hopefully be one of many.

FORTH is fast, compact and extensable andeal anguage for microcomputer users, allowing structured programming with top-down development and virtual memory. Surely such properties should not remain privily to the few outlineers.

Hopefully we will soon see a liftle more editional FORTHsight in the otherwsia worthy pages of *Microcomputer Printoul*

F Renout Southampton

This is one of those unfortunately (unFORTH inately, surely? – Ed) if hicken-and-egg situations. FORTH won't take off until more people are using it, and more people won ture it until takes off.

Don't get us wrong Mr Renoul, we have nothing against the language FORTH – Indeed, we would agree that it is a better ranguage for program development. What we have been anxious to avoid however is an academic discussion on which is the best language for rearning – when in practical terms there is little of no choice.

Creatly this is just beginning to change, so don't worry we will be writing about FORTH, but from a practical availability viewpoint - not a theoretical comparison.

Two Controversial Machines

Texas Instruments' Ti99/4A (left) represents good value for money but makes little noise in the market place – see Dallas

The BBC (right) has suffered many production delays, as defended in Needle Stuck





READ/WRITE

The Editor welcomes your letters, but if you require a personal reply please enclose an S A.E.

Grauniad syndrome

I always enjoy MicroComputer Printout and find it a valuable source of information it usually is well produced and pleasant to read – but what a mess the November issue turned out to be

Even if you had purposely added all the spelling errors and doubled paragraphs as one of your obscure jokes you couldn't have made more mess

3 out of 10. Please try harder next time u uarrati Welwyn Garden City, Herts

The Editor replies, We apologise sincerely for any errors which crept into the November issue Unusually high sunspot activity over the Yateley area (giving rise to bit-errors on our disk based typesetter), unusually protracted hangover in the Art Department (caused by intensive celebration at having finally acquired a drawing board) and other factors beyond the publisher's control, all had little or nothing to do with it

Grovel

Are you really giving flowchart stencils away free! I've got 110 pupils and they all share mine (our Head says the achool is terribly poor and I can believe it). Please send me some. A set of the Programmer Crib Cards would also be appreciated, but we do not need them as much

(Now entering Grovel Mode)

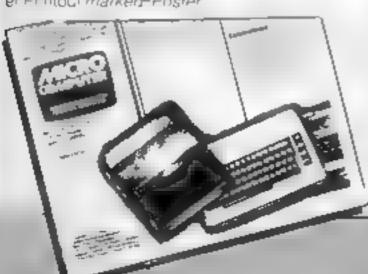
Congratulations on an excellent magazine. I've got every issue, right back to the first one from December 1979 with 20 pages. This last issue has over 100 pages at the same price so how can you afford to give anything away? No don't tell me. It is because you now let posh people who don't own PETs read it. Well some good had to come of it I suppose. I read it from cover to cover and enjoy all the articles, but there do seem to be a lot of adverts for things I can't alford.

Robert Chrismas

Teacher in charge of Computer Studies Bridgemary Community School Hants

We'll have a word with the advertisers on your behalf. Robert — see if we can't get some of these prices down. Mind you — judging by the number of solicitor's letters Julian Allason gets us each morith, we probably won't have any advertising by Christmas! [Memo to Art Editor Mike, this letter is good publicity - make sure it goes at the top of the page in bold type — Ed]

Note to readers. Thanks to the enthusiasm with which our offer of free stencils was taken up stocks are now exhausted. We do, however have plenty of spare copies of the colour poster in last month's issue. Again, we will offer one or more posters free to any school or training organization, that sends a stamped addressed envelope (10x8ins) to MicroComputer Printout marked=Poster.



Make someone happy...

I do not buy any micro magazine regularly, but only as my interest is caught by a particular article. Lately I have bought your magazine because of the articles on enhanced BASIC for the PET, but I must confess that my knowledge. of machine code was nil, even to the extent of not knowing how to enter the monitor in spite. of frustrated searching of manuals etc. In desperation I eventually phoned the number given at the end of the last article and was agreeably surprised when it was answered by Dave Barrett, the author himself. Over a period and during the course of 3 phone calls he not only explained several points in the article which were causing difficulties to a novice like myself, but also patiently conveyed some of the very elementary but essential knowledge which I myself lacked and needed before I could make a start

I am most grateful for the trouble he has taken and look forward to his future articles with keen interest

> Brian Adams Liverpool

Thank you for your letter, Mr. Adams, Daves Barrett and Wardill deserve a great deal of thanks from the many readers they have helped with similar queries. Readers may like to know that Martin 'Legless' Banks has of-leted a personal consultation service on matters legal, philosophical and (preferably) a coholic

Chip on shoulder

Regarding the number of 32-bit registers on the 16032, perhaps you should purchase Tommy a stronger magnifying glass. To come up with 16 registers it is not only necessary to pretend that the program counter is a register it is also necessary to pretend that the MOD and PSR registers are 32-bits in length. In fact, the MOD register is only 16-bits long and the status register contains only 10-bits.

By the way the 6502 is really a 16-bit processor. The program counter register is 16bits long light?

It is interesting to note on page 24 of your October issue that the VIC-20 is setting for £199 in Britain. In LA the same machine sets for \$169.

It is becoming increasingly clear why the British Empire is shrinking!

> Anonymous Santa Ana, California

Anonymous! Santa Ana? Come off it! Do we detect just the teensiest hint of axe-grinding going on in the background? Surely this couldn't be coming from someone who supports another microprocessor could it?

Anyway, who says the British Empire is shrinking? Still we agree about the pricing £169 (current r r p) against \$169 seems a trifle excessive. Interestingly, however, the Commodore 64 has been announced here at £299 compared with \$595 in the USA, we believe

Disgruntled

You appear never to have heard of machines such as the Triton? Let me put you in the know

Triton was in 79 what the Beeb is now the best UK machine on the market and it was the machine that launched a minor company nowadays. Transam you may have heard of them - and Mike Hughes for that matter (should I say Mike P50 Hughes In-Triton joke!) and his second brain child, the Tuscan S-100 microcomputer.

These minor and tinny machines are of no signifiance, they only run CP/M, hard-disks, and are generally regarded as an example of good quality British Computer Technology but if you prefer the electronic doorstep or it is Technicolour, mate, the Spectrum, then let me not interfere. The Triton and Tuscan are hobbyist machines — Le soldering iron wielding variety.

Yours, a disgrunted Triton owner

Aidan Pennington

P.S. Any Triton owner who is not a member of the new Independent Triton User Group should contact

> Andy Laurie Coniters: Townsend Road Ashlord: Mddx (subs are £5 a year)

Never heard of it - or the Triton computer

Fanmali

Dear Dogbreath

We think your hot ine column is a load of cr*p and that Julian Aliason is a complete hurd

Any lurther rubbishing of the *Triton* and me mate Big Douglas will be round to show you his bunch of lives.

So watch it

(Signed) Darren and the Gang St. Edward's School London E1

Julian Allason writes



Thank you for your interesting tetter It's always good to have the intellectual tone of the magaziene raised by a bit of feedback from readers.

Your Headmaster has kindly give me your home address and I shall be sending some gentiemen who work in our Debt Recovery de partment round to see you

Do stay in touch as we shall be interested to know how you and Big Douglas get on without knee caps

Yours sincerely

Dogbreath

P.S.Pity about the Triton

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Smallest Yet?

The next computer you buy may be no larger than this magazine, albeit a little thicker (you too mate1)

It will be battery powered, have a proper typewriter keyboard LCD screen, built-in microcassette tape storage, and its own integral printer

It is the Epson HX-20, and it goes on sale here shortly

I first tried it at the Hanover Trade Fair this Spring, and if struck me then as representing the al rection in which personal computers must go. That is to say small enough to fit in a brief case but with sufficient power to carry ratifical business computing tasks

So how well does the Epson measure up?

Small enough it certainly is Indeed it is doubtful if a computer could be made much smaller. without sacrificing keyhoard

The screen is configured at power-on as 4-lines of twenty characters. Clearly there is room for improvement in this format as

CP/M vs MSDOS Punchup - Cont.

Biff' Bang! Wallop! What started as a discreet dust up between the two titans of the micro world, is showing signs of developing into an industry-wide free-for all

It started in gentlemanly-enough fashion with Microsoft's Bil. Gates directing IBM to his good friend Gary Kildall founder of Digital Research For reasons best known to himself Kildall declined to assist and IBM ended up making MSDOS the official operating system of their Personal Computer, instead of CP/M

Microsoft looked set to win the second round also, with the applications software houses plumping more and more for MSDOS - largely thanks to the IRM factor

Now Digital Research have received help from an unexpected quarter Intel, muscular manufacturer of the 8086 and 8088 microprocessors at the heart of the trouble, have waded in with a version of CP/M 86 on a chip

This particular shilaleagh

will speed up execution time (CP M 86 had been entised for being too slow) and cut costs. It also has the interesting capability of enabling a portion of RAM memory to be treated as if it were a floppy disk

The significance of this is that it will enable standard CP/M 86 programs to be run on portable, diskless computers. And take Uncle Julian's word for it, portable 16-bit computers are just around the corner

Digital Research haven t been slow to defend themselves and their market either, G. Kilda. having just announced concurrent CP/M CP/M for the 16/32 bit Motorola 68000 (which should be a reference to 1 m Keen and his Corvus Concept marketeers) and a new version of the original 8-b t MP/M operating system that actually works

All good knock about stuff, you may consider. Others might think differently. "I just pray that one of

designated the 80150 co-processor. These operating systems engages a clear winner, otherwise it will be a nightmare for us trying to support them all" one well known software publisher told me

> In my experience such nightmares have a way of translating themselves into bigget bills for you and me

> P S Digital Research are organizing the first CP/M exhibition from January 21st to 23rd at San Fransisco s enormous Moscone Centre There will be over 200 stands devoted to CP/M applications packages, development aids microcomputers, peripherals and publications, plus a series of workshops addressed by the like of Adam Osborne, and of course Gary Kildall himself

Details of CP/M83 from Northeast Expositions Inc. 824 Boylston Street, Chestnut Hill Massachusetts 02167 Fel 0101-617-739-2000

Heat that Bill Gates!



display technology develops Epson have, however, made provision in the software for lines of up to 255 characters in length

A CRT controller is promised so it should be possible to generate longer lines by plugging into an ordinary TV

The HX 20 is being supplied. with 16k bytes of RAM memory as standard of which 12 6K (about 13 000 characters worth). will be available to the user. This can be expanded to 28.6 KB

The 32K of ROM containing the operating system and Microsoft BASIC, can be expanded to a maximum of 72KB so various plug-in goodies are clearly envisaged

The HX 20 uses CMOS circustry causing a very low power drain on the rechargable nickle-cadmium batteries. The company reckon they should give 40 to 50 hours of

normal use before needing a topup at the mains

Epson reckon to have an astonishing 40% of the world market for computer printers, so with can expect the printer to live up to the claims made for it Specifically these are that it should out-last the computer(')

The printer prints upper and lower case characters, twenty four to the line, on a 5 x 7 matrix. The speed is an acceptable 42 lines per

Back up storage is provided for microcassette tapes similar to those used in dictating machines Floppy disks - probably of the moniature Sony variety - are promised. And so is all accoustic coupler for communication over telephone bncs

The HX 20 will be sharing my ife for the next month. I will let you know how we get on

Yes We Have No Banana

The Editor has forbidden me to recount you the (frue) story about Bridgette Bardot and my banana So instead I shall fell you about a computer that counts them [This hetter be good - Ed]

The new micro comes from Geest, the big banana amongst fruit importers, and was orginally developed for the purposes of maintaining files on some 300 of their grocers

'Our micro is very simple to maintain, and we have found someone in the West Indies who can maintain it "says Dr. Derck Bilby of Geest Computer Services (tel 40733-51231).

The banana micro is based on the good old Z-86 chip, rejuices in 64K bytes of RAM memory, and offers a choice of twan 5 1/4" or 8". Roppy disk drives, or an on-board Winchester disk for storing all the information about bananas [II] this isn't true. I will be having you, my son ~ Ed 1

We had a problem with voltage flucti ations in St. Lucia, which we overcame with a voltage stabilizer," says Dr. Bilby. "And that was the only slip-up

Agghh! - Ed]

Curses!

Aaaghr! I have just crased the entire file containing this month \$ Hothag Gone! Vanished! Just like that!

Were I the proud owner of Filefix, strange oaths would not have rent the Berkshire air. The diskette would not have been danced upon. My secretary would not now be in tears

For with Filefix I could have identified and recovered the grased file, and then protected it against future clumsiness. I would also be able to delete and rename.

files, and forge multiple user link to a single CP/M file

All these operations are performed on the directory itself so data in the actual files isn't altered

Alas I do not own a copy of Filefix and have been unable to discover a UK distributor. After this latest catastrophe, I think I shall have to send \$.00 to Digital Marketing at 2670 Cherry Lanc Walnut Creek California 94596, for a copy

by Julian Allason



Bookworm

As a cupidinous consumer of computer books, your columnist is ancomfortably aware of a certain ack of hibiophilic coverage in this organ

Clearly this, along with the dripping bathroom tap, our ceaseless attention to the activities of Martin 'Legless' Banks and a capable lack of cheesecake, constitute a wrong to be righted

Here goes

The very best place to start is with George's Computer Book Catalogue George is actually the delightful Jean Young who tells me that "the catalogue started as a labour of tove but ended as hard labour" Thumbing through its thousands of entries, all neatly cross indexed under a variety of headings, it represents very good value at £2 from George s Hooksellers, 89 Park Street, Bristol, BSI SPW (tel 027) 2766021

Another essential tome is A Hundbook of New Office Technology (Century paperback £5 95) by our combative contributor John Derrick, who with partner Philip Oppenheim has double handedly antagonized the office equipment industry with their scathing verseurs in What To Buy For Business magazine

Much of the material which covers everything from copic is the computers, first appeared in WIBIB but is none the-less useful for that. They also float the only convincing scenario for the office of the future we have yet encountered

A good stock of computer titles, including several I have failed to track down elsewhere, is held by Watford Technica, Books at 105 St Albans Road Watford Who will supply a full list upon receipt of an SAE

Disk Drives Doomed

Here at your favourite computer ragazine we have evolved the ultimate test for new technology We let the Daily Telegraph's inimitable Science Correspondant Adman Berry loose on it. If it can survive three days of Adrian's attentions, if will survive

It is my sad duty then to inform you of the impending demise of the floppy disk. No less than five Commodore disks have fassed the Felegraph test, and not even the Strius drives proved totally Berry-

What then is to replace them? Some new solid state technology, perhaps

The probable answer is No and Yes

Yes, on-line memory wilbecome solid state, and No, the technology won't be new

Think Bubble Five years ago lots of people, notably Texas Instruments, did Now, just when the principal manufacturers are starting to shut up shop, Bubble memory is about to stage a remarkable come back

There are several reasons Firstly, unlike disk it has nothing mechanical to go wrong. Bubble should safely survive the sort of shaking that gives Adam Osborne

might mares

Secondly, it is stable. Unlike ordinary RAM chips, the memory remains intact when you switch the power off and on

Finally, it is compact, more so than even the new slim line floppy disk drives

Couple these with the extraordinary demand for a truly portable business computer, and what do you get?

My guess would have been something resembling the new Commodore 64 That is to say a proper typewriter keyboard and a decent amount of RAM stuffed into a box small enough to fit in a brief case. Instead of disk drives, a built in bubble memory board of equivalent capacity

The beauty of such a system would be that it would run standard. software w-thout modification

In practice it should run quite a bit faster sance bubble memory

access takes a fraction of the time. a disk drive does

The big problem with Bubble was always price. Somehow the redoubtable John Chew of Kingston Computers (tel: 0262) 73036) seems to have got round this. He reckons to have a 128K. Bubble RAM disk board for the Commodore 64 on sale by the time you read this Price about £795 And even that will come down if it really catches on

Bubble is idea, for data collection " says Chew And the IBM Personal Computer just cries

An Apple II with a built in bubble board in place of disks has to be an attractive idea too. Chew agroas

The beauty of bubble is that the is brown-out proof," he says

Which leaves just one question unanswered as it Herry-proof too?



Owner Jeremy Dicks tells me they are the only bookshop in Watford not to stock Not the F Plan Diet of an Edwardian Parrot I don't doubt at

Diey also offer a telephone service for credit card owners on 0923-23324 as does Mine of Information who hold at least as large a stock MOI are on 0727 528i T

Smaller, Faster CIS -COBOL

No one could ever accuse Micro-Focus of resting on their laureas Their CIS COBOL countries may dominate the market, but they don't sit stil.

Latest word from number 58 Acacia Road, NW8 is of a faster, more compact version with better documentation

For version 4.5, the 15AM facility has been redesigned to

runtime system reduced The new package is available for CP/M and CP/M86 making programs written on 8-bit micros compatible, which should warm their distributors' cockles.

processing, and the size of the

allow for faster indexed sequential

The price remains the same at £425 Existing users can upgrade for £90

Bristol: the Silicon Story

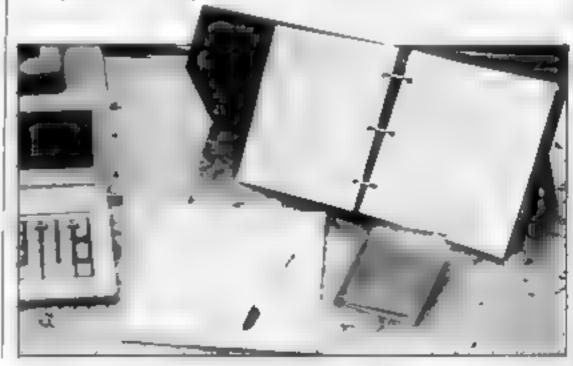
When Silicon Office first appeared my good friend Richard Pawson hailed it on these pages as the first genuinely useful all purpose piece of micro software, thereby putting a number of noses out of joint

Nothing that has appeared since by way of all singing, all dancing database-cum-word processorcum-accounting suites has caused our esteemed editor to change his

Unless it is Silicon Office-C, a new version for the equally new Commodore hard disk drives. It sings more songs, (5 megabytes worth of memory), dances faster 4 to 5 times), and costs more £990 + VAT

What's that? You are one of the three thousand odd existing Silicon Office-workers? Then upgrade dear boy Add the Commodore's 9060 or 9090 hard disk drive to your CBM/PET system, send Bristol Software Factory a cheque for £200 + VAT, and enjoy life

Write to Bristol Software Factory at Kingson's House Grove Avenue, Queen's Square Bristol BS1 4QY, or telephone them on 0272-277135, but no jokes about Bristols and implants please, they have heard them all before



Texas – The Big One



Modesty, and a healthy respect for Texas Instruments writ-assuing department prevents me from posing the question that so ammated the dealer network this

1Go on then, we will stand your tegal costs - Edt

Has TI gone off their trolley? Let me tell you a story about two more manufacturers. Both had handsome personal computers selling for about £200. Both thought they could sell even more if the price was £150.

One - let us call h m Commodore - samply reduced the trade price by a quarter, from, let

us say around £1 30 down to £100.

The other liet us call him II - kept the trade price at around ET30, but offered to send purchasers a safe cheque for £50.

So although both computers sold for £150, and both gave dealers similar trade terms Commodore now made approximately £100 on every sale while Ti received only around 1,3451

Hmm

Well we asked Texas about this interesting strategy, and they said

Then they explained that it was important to preserve dealer margins. And then they said that

lower prices meant larger sales and larger sales meant lower production costs, and that anyway they made their money out of follow-up sales of software and peripherais

Not that their software and peripherals were too expensive My word no. Why they had just reduced the price of some of more too

Homs

Still why should we worry? The 1199/4A is a true computer and at £150, excellent value. If Texaswant to play ducks and drakes. with their trade pricing, should it bother us 1

Hmm

Chinese Copy

Some or us have enough trouble making our BASIC programs do what they ought. Imagine the added difficulty if your native language is not English

French efforts to prevent the anglicization of their mother tongue resulted in an hilarious indiginous version of BASIC along the lines of

100 SLA = B PUIS IMPRIME "SAPRISTI" FIN

The difficulties of programming in high level languages must be considerably compounded where one's first language uses a non-Roman character set as in Changse

My friend George Huang in Taiwan thinks be has solved the problem with his Chinese BASIC cartridge. The software contained. in it translates the forty six most frequently used BASIC graphic and system commands into Chinese characters

So a short routine in standard BASIC

DIM A(20) ASSIGN A(I) # 1 TO 20 8 5 # I + 2 PRINT A(1) FOR I = 1 TO 20 NEXT I 196

comes out looking tike this

50 A(I) = 5 * I + 2

George's company, Multitech Industrial Corporation of 977 Min Shan E. Road, Taiper reckon to be able to get any language up and running on a castridge within two months Anyone for Serbo-Croat?

I meet the Sponge

Flad an intriguing chat with Neil Hewitt of Stage One Computers the Administrator people, this week

Neil has pretty firm ideas about what a business program should be, and his software team have spent the last three years putting them into practice

"No outsider knows or is going to learn as much about the business. as the proprieter, so we have tried to create a system which allows the businessman to design and set ьр his own system," says Neil And w thout having to learn

programming "The stage we have reached now with the software, permits the user to set up whatever system he wants

So it is a database?

I am reluctant to call it that What I do believe is that most commercial applications require the ability to store records of

unlimited length. The Administrator provides that fac lity

One of the other notable features of Stage One's System is that you are not continually having to switch from mode to mode Everything is always immediately accessible

All of which puts one in mind of the Silicon Office system. Neil Hewitt disagrees

Milicon Office is a really a command-level language, whereas we don't believe you should have to contend with a language at al

Like Silicon Office the Administrator was until recently available only for Commodore computers. That is about to change, as it makes its appearance running on the Stries, and, in due course the IBM Personal Computer

The structural design of the programs has always been such that we could jump individual system limitations," he explains

That is precisely what we did with the Commodore Disk Operating System, we jumped over it straight to track and

A new version called Administrator II runs on the Commodore 8096 the buse ass version of the PET with 96K of RAM Neil Hewitt says the increase in speed is dramatic

Stage One have recently technstened themselves SOSOFT You will find them at 300 Ashley Road, Poole Dorset Tel 0202 735656

Rumour has it that SOSOFT have developed a remarkable new facility called the Sponge, sonamed on account of its ability to absorb data from other programs!

Hewitt denies it But then he would wouldn't he?

by Julian Allason

O.H.M.S

According to my friend Bradbeer most micro programs are conceived in ignorance and executed in south

Intastor Micro Aids propose to cure BBC Micro-users of this 'design the program-as-you-go' syndrome with their officia, BBC Programmer's Kit To further discourage backsliding, the kit is I rished in official BBC livery

Contained within is an official flow chart bad official screen ayout pad, and official symbol

design pad, each of 100 sheets.

The pads are bound within indestructable black polypropylene official binders inside the covers of which are printed useful reference nems These include official BBC Microcomputer screen models officially suggested symbols and official key list of logical colour changes between models

The Official Special Launch Price is £9 90, plus £1 p&p, from Intastor Micro Aids, FR1 F POST



More Sex Please

I have always maintained that we MicroComputer Printout - reading types were superior persons

Confirmation of this self-evident fact comes from the boffins at M S Electronics Marketing, who after exhaustive study have assessed that the ordinary people are unable to use keyboards of the QWERTY variety

Indeed it seems that the lidipoloi (anti-elitist editorial note hdi-polor = common people) can only be trusted to select from a choice of YES, NO or MAYBE

The result is the Interactive Computer Keyboard, which has just three keys. Where menuse ection cannot be avoided a tenkey version (illustrated) is available

With the arrival of interactive cable TV, this will permit the selection of [1] more sex, [2] more violence, [3] more offensive ranguage, [4] more sex, violence and offensive language, etc. etc.

M.S. Electronics Marketing are at 41 Parace Road Bromley Kent

MAYBE

8-bit + 16-bit = ?

Tom Fitzpatrick is not a man to muck about. So when his firm LSI Computers of Woking, set . about designing their own microcomputer, they didn't get involved in the 8-bit or 16-bit CPU argument, they just stuck in one of each

Tom reckons that as the 16-bit software becomes available. purchasers of his new M Four computer will buy that, using their existing 8-bit software for the fillin jobs for which new software is not worth while

Like the IBM PC and Sirius the M. Four uses the Intel 8088. microprocessor. Like half the 8 bit systems in the world it has a Z 80 CPU - the souped-up Z80B which runs at a spanking 5MHz

Changing from 8-bit to 16-bit operation is controlled by software commands.

For storage LSI offer a variety of options ranging from 350K. floppy disk drives, of which Tomis understandably not expecting to sell many, up to 10 megabyte 5 1/4" Winchester disks

The Keybi and Jisho less than Bluser programm able keys, the screen D20 characters, while the gubbins round the back include three RS332C perts, suc of them Asyne Syne one RS422 on Fand Centropies compatible printer

I om thinks the £2000 plas (according to specification) price tag could justify the M Four even if a customer had no 16-bit. software at all at present but expected to go that way in the future

The cost of changing all existing software to 16-bit, when only one or two programs actually needed the upgrade would more than equal the increment in cost of the M-Four over 8 bit or 16 bit single processor machines

DEC who just happen to be the most successful minicomputer vendor in the world reached the same conclusion with their Rambow miero

It will be interesting to see if the customer follows the logic



'Anything-to-Anything' Interface

O. When is an interface not an interface?

A. When it is a computer

Confused^o I know I am I always used to think of an interface as a brack box that mysteriously made connection. possible between a computer and an otherwise incompatible peripheral

Now the interface itself is turning into a computer. Take Interpod the new 'anything toanything interface from the Perspeed mob up at Oxford Computer Systems

It has its own microprocessor

ts own memory, and a lows the VIC 20 and Commodore 64 to ink to a whole range of IF ET devices. Yet it is completely transparent to the user and, say Oxford Computer Systems interferes not at all with a ther computer or peripherals

Note for Boffins. The interface will not only connect para:lel-IFFF to Commodore serial and vice-versa, but will also convert either bus to R\$232

£95 cheques to OCS at The Old Signal Box (real v1) Hensington Road, Woodstock Oxford: Tel: 0993 812700

HOTLINE

Mr. Hale and his Amazing Peachtree

As the battle for the business software market hots up, one name is being increasingly mentioned: Peachtree.

In America Peachtree, part of the world's largest software house MSA, are market leaders. Can they repeat the trick here? JULIAN ALLASON interrogated Managing Director, JOHN HALE

Affason: "Your software is widely regarded as sound but unexciting."

Hale: "Peachtree has a reputation for being boring and pedestrian And I am quite pleased about it, because it means the software is stable."

We have been crincized by some custosmers for not fully exploiting the capabilities of the new 16-bit micros, on the IBM Personal Computer. What we are offering essentially are our 8-bit programs converted.

But that is the point. We should not be the leading edge. Our intention is to offer neal and tested software people can trust."

If I were a businessman I would be browned off to discover that the software I have just bought was suddenly obsolete. But it will be "

With so many hardware developments taking place so rips by we wrons year to

guarantee that each new release of our software will be totally compatible with its predecessors

What we can do is ensure that the procedures – the way in which the system operates – and the data are preserved. So if you upgrade to a 16-bit system, say, you will need a new program. But you won I have to retrain your staff to use it, or to rekey in all the data

"To my mind that is far more important than being first kid on the block with colour graphics and speech

Allason: "No colour graphics or speech then?"

Hale: "We will have them dext year"

Allason: "What don't you like about Peachtree software."

Hale: "One great complaint I have is that Peachtree isn't growing found a database management system. (vc)

You see I come to this area with a personal perception that it is to do with information approcessing - not Pacman

Allason: "You won't be going into the games business then?

Hale: "We might Pacman and Adventure have characteristics in common with word processing and spreadsheet softwear. They are completely self-sufficient, and can be sold my mind order without support."

Allason: "Are you irrevocably committed to the CP/M operating system."

Hale: "Lots of people think we are, probably because we were one of the people who helped make it a success in the States, we have 800 dealers there

The IBM Personal Computer which I use myself incidentally took us away from CP'M for the first time. IBM had commissioned MSDOS from Microsoft. In fact we are just about to start supporting MSDOS here with the launch of our programs on the Struck I.

We think it is very healthy that there should be two operating systems

Alluson: "What do you see in your crystal ball?"

Hale: "Xenix An inevitable trens toward software being sold as bardware. I can see IBMs mainframe DOS working on a micro one day."

5TOP PRESS, Peachtree have just formally announced two colour graphics systems referred to by John Hak

Peachtree Business Graphics
System is a menu-driven graphics
application program for CP/M
based computers, that provides a
link to their Peach Calc
spreadsheet program, and to the
Peach Text word processor, better
known as Magic Wand

The second product is an interactive graphics programmin, language also for microcomputers random CP-M called Peachtree Graphics Language.

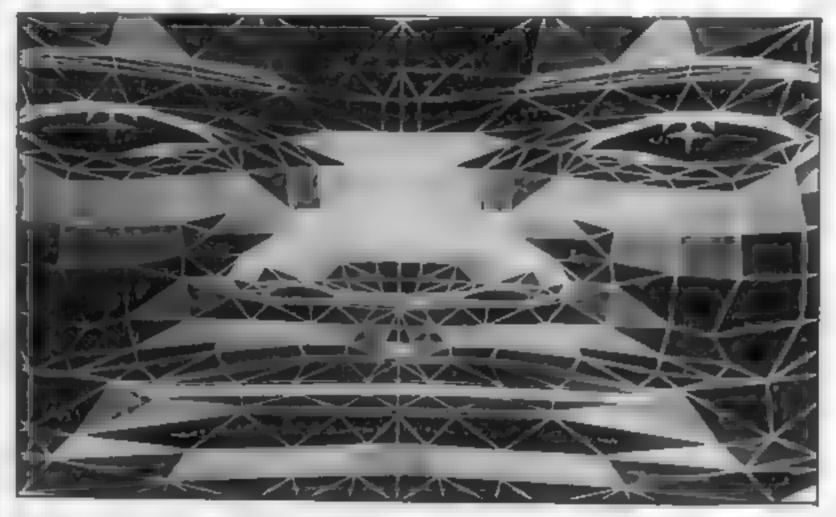
Its features include pic and bar charts, zooming panning and rotation all achieved using I nglish language communits

Being device independant, PGL is as happy with input from digitizers, light pens or cursor keys for selecting from menus defining polygons and painting pictures.

Similarly it will drive a variety of output devices including Hewlett Packard HP-GL series plotters. Epson printers and any PLOT-10 compatible CR1 What elever hads they are!



Allason altercation with Admiral



A quiet word in your ear about Walt Disney's Tron Ignore the firm critics, incorrigible technophobic fogies to a man (or in the case of the Daily Mail in woman.

From is magic. And I say that despite having viewed it under rather trying circumstances (if you must know. I became involved in an altercation with the doorman of the Odeon. Leicester Square). The computer graphics are quite the best I have ever seen. and

Jessica, who programmeth not claimed to have no difficulty following the plot

I will concede the old fogic since point however. A knowledge of computers is an asset, though not essential. If only to appreciate the jokes. I took with me Philip Burton's excellent new Dictionary of MiniComputers and Microcomputing (pub. Wiley £15) and needed it hardly at all.

Look at Trot in the dictionary and you find (Noun), Joke at expense of non-technical persons Also Tronsc (adj.)

Nice one, Philip

The best joke in the film concerns Pacman. So subtle is it that the Editor only got it the second time around. One of our solid sterling silver Space Invader badges awaits the first reader to spot it.

Meanwhile of you are up Leicester Square way, watch out for a goon dressed like an admiral

Christmas Cheers!

It being the reason of merry festive cheer not to mention a good deal of merry festive breatharyzing here abouts this co unin has been much exercised with the compilation of its christmas ist

It started we Lenough with a metry blue pencil for the Editor his being worn out. Lemmy is to receive his usual tankerload of Ruddles strong and cloudy for leside Trader. I think some merry virtial to dip his pen in. But what on earth does one give the wite?

The proposed quelquechoses lacy and frilly were not well received not yet the suggest on of a BBC model A. Commodere's VIC Pacman, the source of such egal logistics just now, was a milarly rejected. We may have to settle for a surprise

The Art Editor will receive something artistic A pink how the perhaps. But of Terry Hope, our sole contributor of taste and discernment, what?

Something for the favatory he spends enough time there was the helpful suggestion of our publisher. Robin Webb, who will be receiving a stopwatch, the better to time his observations.

In the end, I did get Terry something for the smallest room in his house. Beyond the Tingle Ouottent by the Sanday Times amable columnist. Godfrey Smith, published by Wiedenferd at 25,95.

I am aure Godfrey won't be offended by my description of it as quite the best loo-book there is There is not much about micros in it but judge the flavour from the following excerpt

Three professors were quartelling about whose language was the most beautiful, using as their lest case butterfly, farfalla and papillon, when a German professor broke in brusquely with "Und was ist los mit schmetterling?"

If anyone out there is making up their list. I would love an Atari and

Happy Christmas!

Multi-lingual menace



This column's sunny disposition enables it to pass severely over jibes about BASIC

But to be challenged on the subject of computer languages that is another matter

How, we wonder, is Mr. Birch's PASCAL? Is he fluent in FORTH? Familiar with FIFTH? Can he rustle up a little ALGOL before tea?

Is he are fait with such specialist applications languages as SNOBOL (Meterology). LISP (Baket dancing), VANDOL (Sociology) and LIBOL (Journalism)?

Perchance he has encountered the German Military dialects DONR and BLTZN^o And how is his DONK (That is quite enough of that! Ed)

One of our celebrated sterling silver space invader badges awaits the reader submitting the most bizzare collection of computer languages. So let's be hearing from you!

Did you hear about GOOL for grave digeers, or MOTEL for tovers? Then there is STARK for nudists, WAGON for alcoholics

Spreadsheet modelling is probably one of the most cost effective applications of a microcomputer—and the programs such as Visicalc and its many imitators have dominated the bestselling software lists. But modelling does not just apply to financial planning; and with a little imagination you can apply it to most areas of your business—with profitable results. Graham Tuppen explains how.

MAKING THE MOST OF YOUR SPREADSHET

The Birth of Financial Modelling

Modelling suffered a difficult childhood-born into a family of economists, it was immediately expected to apply its as yet undeveloped logic to solving the problems posed by national (even international) economies. Given that its immediate ancestors were themselves responsible for many of the problems that currently existed. it was sad that mode.ling could do little better at its first attempt than MV = PT. This simple statement has something to do with the volume of money in the economy and its velocity of circulation being in some form of direct relation to prices and something else, and was clearly the infantile stumbling of the intellectually inadequate child. With the exception of the U.K. Treasury and a certain former American film star, the world ignored this economic model, and the family tree suffered yet another dent in its already tarnished image Throughout its lonery and abused childhood therefore, modelling sought a saviour, a knight on a white charger or perhaps even a P R executive to rescue it from its world of academics and economists Modelling needed someone to promote its image as a friendly, likeable, even useful fellow of more real value to the world than had hitherto been suggested by its academic ancestors Software Arts, ridden by Dan Bricklin and Bob Frankston, galloped out of the western sunset (an unusual entry!!) and in 1979 Visicale was born. Modelling was

Supercalt, gall, Calesty, Legali, 1991, 116, Production 1991, 1991

suddenly able explain itself, and Software Arts provided it with an electronic worksheet on which to display its powers. Simplicity was the keyword and modelling could be described in just a few sentences

An electronic piece of paper consisting of 16000 slots or coordinates into which things can be put. These slots will only accept three things. The first two are very straightforward. feed a word or a number into a slot, and it will be displayed on the screen for you to look at, print out or change whenever you like. The third thing is a bit trickier but is the juicy bit on the skeleton of words and numbers presented above. Mathematical formulae. Yes, simple mathematical formulae which can be used to interrelate ANY of the numeric slots in almost any way you like Accountants were delighted Project analysts were delinous with joy. The remainder of the population, not privileged enough to wear the pinstriped uniform of the higher echelons of the financial community.

moved slowly away—disappointed that this much heralded breakthrough in the world of personal computing was not theirs to share. However, the image producers clearly knew best and modelling was enthusiastically adopted by the financial planners and analysts of this world, and Software Arts became very large, and Dan Bricklin was able to buy a very smart car with the registration number "Visicar"

The Look Alikes Appear

As Visicale became the fastest selling piece of software ever developed, its mother hardware prospered, and we hear that Visicale was directly responsible for the sale of very many thousands of Apple computers. With the market so large and rich, the competition could not be expected to remain idle for long, and soon the uncle, aunts, nieces, nephews and cousins started to appear for a piece of the action, SuperCalc, CalcStar, Logicale, Magicale, ParaCale, PlannerCalc and Visicalc are just a few selected from a selection sixty financial modelling packages now available, ranging in price for £30 to £16000. There is even a microcomputer called Prophet which has its own Visicale clone. permantly built in as ROM Everyone joined in and surprisingly the market for financial planning seemed to be expanding rapidly enough to ensure a reasonable return on investment for most of the relatives. Sadly for Software Arts, most of the look alikes were able to

identify and improve upon faults in the original Visicale, so successive generations have seen a significant improvement in performance Somehow, I think that VisiCorp have made so much money from this original idea that they do not really mind

Use Your Imagination

Now you are probably wondering why I made such a fuss about modelling having such a miserable family life and then being saddled with unfortunate prefix "financial" The point that I would now like to make is that the first step towards "Getting more out of your Spreadsheet" is to forget the words "financial planning" and think quite clearly about what modelling is, at its most fundamental level. Is it not simply the manipulation of words and numbers to achieve a desired result? And is this not a task undertaken by almost every member of the adult working community, perhaps several times a day, whenever he or she picks up a pen, paper and calculator? There is no doubt whatsoever that modelling is inordinately useful when planning for the future. When the likely outcome of an almost infinite series of options can be studied at the press of a button. However, we must not ignore those repetitive calculations, often involving historic data, which are ideal applications for modelling Let us examine some examples of the more unusual sorts of applications.

Pricing and Estimating

Some businesses are lucky enough to sell items which can be accurately priced in advance so that the request for a cost estimate requires no more than a brief inspection of a price list. Many more however are faced with lengthy and repetitive calculations before any estimate can be issued. A double glazing contractor, for example, may need to price special size windows based upon variable types of glass supplied at X pounds

HOW DOES A SPREADSHEET WORK?

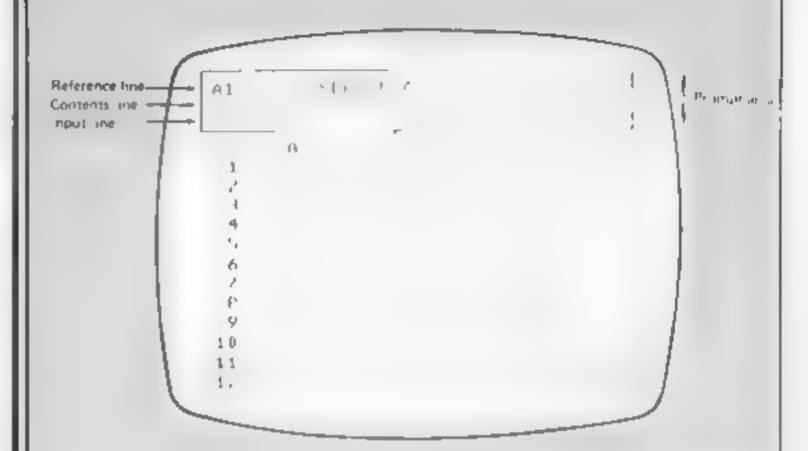


Figure 1

A typical epreadsheet program will display part of a large matrix of cells which can contein words, numbers or formulae. Each cell in referred to by a letter and nubmer e.g. Al or C12.

A spreadsheet program is essentially a matrix of some 16,000 cells or fields, arranged in rows and columns. The columns are designated by a letter, the rows by numbers.

The VDU of screen allows you to look at any bit of this huge matrix, and your whereabouts may be defined by the coordinates of the slot in which you are sitting. If you can find Lombard Street by looking up a page reference and coordinates in a London A-Z, you will be able to find your way around the matrix. Entering words and numbers is easy — simply press the right keys. Enter anything that resembles a mathematical formula and the apreadsheet will do its best to evaluate it.

	A	В	(ENTRY)
1	LENGTH	100	100
2	BREADTH	20	20
3	AREA	2000	B1 x B2

Having entered B1 × B2 in cell B3, you have asked the spreadsheet to calculate the answer to your simple formula, saying take the number in B1 and multiply it by the number in 82. The key to the whole thing is that if we should now change the number in B1 to something else, say 133, the formula in 83 will be re-evaluated and instantly display the new answer, 2660. That is really all there is to it. The formulae can usually be up to about 128 characters long, almost any methematical symbol and interrelate, in any order, any of the co-ordinates in the matrix IF funcautomatic MAXIMUM and MUMEMIM selection. instant NET PRESENT VALUES and many other features ensure that the scope for mathematical gymnastics is virtually limitless.

MAKING THE MOST OF YOUR

SPREADSHEET

per square metre fitted into a framing material charged at Y pounds per foot. Add to that variable fitting items for different window sizes, at different rates for ground floor and first floor, plus travelling time plus many other vanables, and already the mathematics of the project have become weighty. Not only does the manual calculation of so many variables leave a significant chance for error, but the time taken has to be paid for either in cash or, so often the case for small businessmen, in lost leisure time. with Sunday evening earmarked for preparing estimates.

It is not difficult to produce a simple model to take care of this task. allowing the estimator to type in the relevant sizes and letting the model do all the calculations necessary to turn this data into the final quotation

DRICE. Figure 2 shows the input required for a central heating engineer to select the correct radiator to heat a four-wall room of a given size to a required temperature.

Key in the length of each wall, the temperatures on either side of each wall, "U" factors, the number and

area of windows and the height of the room. Instantly the model will carry out all the calculations necessary to work out the BTU required to heat the room, and can select and display those radiators known to give a BTU output of that level. At approximately two minutes per room, such a model can save a heating engineer many hours per week.

Accountants

We already know that accountants have great fun preparing forecasts and budgets, but what about the drudgery, the repetitive number crunching

Imagine this situation: (and as a chartered accountant myself I can assure you that this scene will be acted out in many accountants' offices throughout the country thus very day!)

Having spent hours analysing a jumble of information an accountant finally gets the whole thing added up, transfers the balances to his ledgers and finally produces a set of accounts for presentation to his client. Everything has been typed and is awaiting the client who

promptly spoils everything by walking in and presenting a stack of invoices that he just found in an old sacket that he has not worn for months. Head in hands, on the verge of tears, the accountant contemplates rubbing out and changing all the numbers so carefully analysed, collated, transferred to ledgers and transformed to final accounts. Now picture the man who has built a model for this task. Columns A-Z and lines 1-200 have been used to enter all the analysis, and of course the spreadsheet can be asked to do all the adding up and checking automatically. These totals are then automatically shown over in columns AG to AR where the trial balance is lurking. Finally, way over in columns BA to BG, the rather stern and formal trial balance is transformed into a beautifully designed set of accounts, all related back to that early analysis. Now when the client comes in with his gleeful news, our friendly accountant need only enter the extra invoices and look at (and print out) the instantly revised set of accounts, For all those accountants, in practice and in commerce, who have seen holes appear in pages of analysis paper as successive changes lead to more and more rubbing out and changing of numbers, the spreadsheet is a life-saver Consolidations, asset records, stock valuations, management reports and many more are all ideal applications for models.

Production Planning

How pleased we always are when at last, after much manipulation of the schedules, we have squeezed all the urgent jobs into next week's production schedule, and assured at least a reasonable utilization of plant and machinery. How sad when at lunchtme on the first day two machines break down and destroy the schedule for the whole week,

	SIZE & TEMPS OF ROOM NO: 1
	DIST 14
ı	
l	TEMP 32
ı	!
	! U= 0.4!
ı	DIST 13! !DIST 11
	TEMP 65! TEMP 70! TEMP 65
	U= 0.3! $!U= 0.2$
	! U= 0.5!
	!!WINDOW AREA
	DIST 14 4 X 6
	TEMP 70 HEIGHT: 8.5

Figure 2

CHOOSING YOUR SPREADSHEET

A good imagination is the best aid to increasing the performance of your spreadsheet. There are, however, certain features (not available on all modelling programs) which will remove many of the restrictions imposed by some of the earlier spreadsheets. Whilst the concept of the model is fundamentally the same, these "bells and whistles" make all the difference when you find yourself getting down to serious modelling.

VARIABLE COLUMN WIDTH

An absolute assential for any model which will be used to produce a printed report. Such reports will invariably have columns of nerrative that you would like to have wider than the numeric Information, and it is therefore vital that you can change individual columns to the width you require

Where available, this will often mean that column widths can be reduced to zero characters, effectively removing from the screen or the report any intermediate, unwanted or confidential information

ADEQUATE MODEL SIZE

Load SuperCalc Into a 64K microcomputer and you will normally be left with just 27K of workable memory for modeliing. Allowing for co-ordinate overheads. an average word or number may take up between 10 and 20 bytes of memory (even blank spaces use memory in most programs). All this means that a 64K machine will often allow only 1500 of the available 16000 cells to be filled before the risk of running out of memory looms large. With this in mind, make particularly sure that the modelling program that you choose gives a running indication of just how much memory you have left. There is nothing worse than spending many hours. developing a sophisticated model only to find that the last line will not fit into the memory

DISPLAY FEATURES

Remember that you will only ever be able to see a small percentage of the available 16000 slots on your screen at any one time, so make sure that your program has some good display features to let you look at the luicy bits of your model whenever you like. Visicale and Supercate offer split. screen, double-window facilities to enable you to show two separate bits of the model at the same time. Prophet Plan has gone further: providing the split screen by means of fixed littles, plus the facility to display any line or column in the screen in any order required, (i.e., the top left corner of a model might display lines 1, 83, 156, 17, 200, 53, 2, etc.). Plus & lour screen facility to let you flick directly to four different places in the model at the press of a button

DE-BUGGING

Models, just like programs, may need debugging, and it is important to be able to see the formula underlying every cell Further help is given by those programs which offer the facility to print out a listing of the formulae contained in each cell, and to print the model with or without its column and row designation. Once again, with only a small part of the model on view at any one time, it is very useful to be able to see the whole thing printed out with the co-ordinates of each cell clearly marked

HOLD CELLS

Once a model is built you want to ensure that you, in a moment of passion, or perhaps a less experienced colleague practicing on your model, does not write over a laboriously constructed formula in any of the cells. To this end the facility of protecting or holding a cell is useful

SCREEN EDITING

There are few people in this world with the ability to conceive their model in advance or the patience to plan the entire matrix. on paper before getting going. In most of us the urge to start pressing the keys is fairly strong, and with this in mind, ensure that your program has adequate screen editing facilities

Above all, make sure that you can insert and delete lines and columns at your letsure, because you will surely think of additional things that you want to include in your model

PRE-BUILT MODELS

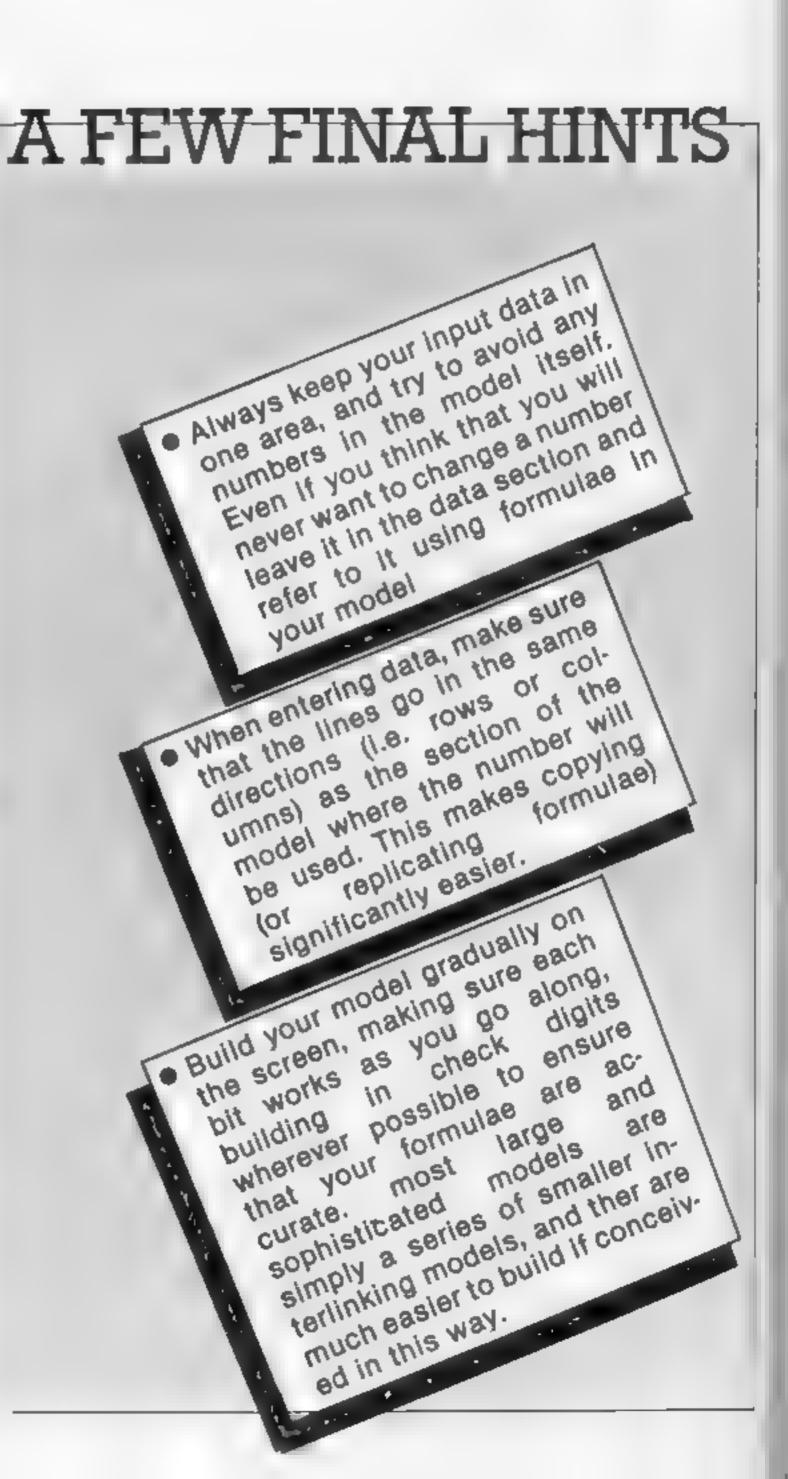
It surprises me that only a very few companies have developed this market. A prebuilt model, easily modified by the user thanks to the flexibility of moderling, avoids the need to re-invent the wheel for every model ever built and provides the basic framework to launch the first time user directly into some useful and often sophisticated mode ling

SPREADSHEET

leaving the production controller in a panic and of course far too busy to produce a revised schedule. How easy it is to produce a model which simply requires the input of available machine hours, job numbers and time required, and where the instantly calculated output is a print out showing how machines can best be utilized to achieve the required production schedule

And Many More.

Pricing cuts of meat based on the weight and cost of the carcass. calculating gear ratios based on racing car aerodynamics, getting the best and most wooden planks from a tree trunk. All of these are applications for modelling In conclusion, then, modelling is extremely easy to learn and there are a number of powerful programs available to run on a full range or machines. The basic concept has little to do with forecasting and financial planning—they are simply one of many ends, the means of achieving which are supplied by the spreadsheet. Think of modelling as the manipulation of words and numbers, and let your imagination enlarge the boundaries of your modeling skills



DAVID PRITCHARD CONTEMPLATES COMPUTER GAMES

PICKED UP this mouth-organ thing, and the editor said "3K. "Pardon?" I queried "Extra memory," he explained "some games need it. Just shove it in the back of the computer

"Well, we've all got to learn sometime, haven't

But having now sampled a number of games. I am not sure that I'm quite ready for the home computer revolution anyway. Before you write me off as a reactionary or something, let me explain.

Speaking from the depths of a week's experience, I would classify the cheap software as falling into two categories, the hand and eye-and-sometimes-ear areade-type games and the game-type games of the chess and draughts variety

There's not too much you can say about arcade games, is there? They can be summed up in a word mavhem Sooner or later (sooner in my case) you are clobbered, chomped drilled, atomised or otherwise eliminated That is not to say that they are not fun. I've been a Space Invaders fanatic since the Flood (my favourite machine is still miraculously in service at my insistence, the landlord values. my custom) So far I've not found a game to match it, although I've had quite a bit of fun with Spiders of Mars (Vic Pack VP 014), The graphics are graphic and the species insects is a deal more attractive - even when they're plugging you - than those amorphous aliens Basically, I suppose, if you re good at one of these games you re not too bad at the others and you certainly don't want to hear about me being massacred in the maze or liquidated on the ladder. So let's turn to the game-type games

Master Class

As yet, only a few of the more popular games are readily available. All that I've tried, play at quite a reasonable standard, which is what you ask of them, though none approach master class despite some pretentious claims

I ve been looking at a game called Renaissance (Vic Pack VP049) The packaging is attractively designed around a picture of a couple of medieval characters in (presumably) Renaissance dress playing the board game (in those days players had to make their own boards and counters') The story line starts "Once upon a time, many centuries ago

Inside we are told Renaissance is a computerised version of the proprietary game Othello. Just to put the record straight, Othello (Renaissance), with two very minor modifications, is the Victorian game of Reversi, invented in 1888, a year or two, you





Which perhaps leads on to the questions: in which direction are computer games going and what can we expect in tomorrow's shops?

will observe, after the Renaissance ended That said, the program is a sound one, with play at eight levels and all the usual facilities to change sides, take moves back, record games and so on Recommended

I also enjoyed a backgammon game (Bug Byte Software 3K expansion required) which played well. A nine-hole golf game however (VP 055) was not so satisfactory. I simply could not see the ball because the contrast between it and the course was madequate [1] may be more realistic that way but I found ntelligent play impossible. A feature I liked about the game was the random element fed in

representing, no doubt, the wind, your rheumatism and the other uncertainties that intrude on any round of golf - which ensures that every game is different even though the course is unchanged and you select the same clubs. Not really my cup of tee, you could say but then I'm not a golfer

Confusing Designs

Contrast does seem to be a failing in several of these games. No serious chessplayer would consider playing with one of the fancy moulded resin sets now on the market because the designs are confusing and instant recognition of the physical elements of a game is essential for concentration. Similarly, the attraction of colour seems to have blinded some software manufacturers to the need to

keep the elements of a strategy game clean clear and in contrast - even if this does mean using largely black and white. Keep the magentas and aquamarines for the titles. please1

I hope I have made clear that I've been talking about the cheaper cartridge and cassette. games, not the more elaborate and fairly expensive adventure games that are becoming increasingly popular, a knock-on, one suspects from the Dungeons & Dragons craze

Which perhaps leads on to the questions in which direction are computer games going and what can we expect in tomorrow's shops" The usual answer to this sort of question is what the manufacturers care to dish up which may be quite a long way from what you and I want

And what do we want? Well, I don't know what you want, but I would like to think it's what I want. For a start, there must be almost untimited scope for making the hand-and-eve games more attractive. I don't know enough about electronics to appreciate the technical problems that may have to be overcome so perhaps I'm a little naive to suggest a scenario for the sort of game that would appeal to me But that won't stop me

Strategy games have a long way to go, too. Games like chess and backgammon can certainly be improved, even if it is only making the programs a little stronger.

The player would be the pilot of an acroplane or helicopter flying low over jungle and mountains beset by the usual hazards (electric storms, peaks embedded in mist, Coca-Colacans thrown by the natives), scoring points by dropping, say, food or medical supplies in small clearings or on cliff ledges. Title: Mercy Mission. It would be a change from the endless. slaughter, anyway And you can do better than that! I thought it up in two minutes flat

Strategy Games

Strategy games have a long way to go, too Games like chess and backgammon can certainly be improved, even if it is only making the programs a little stronger. But I am not so concerned about these. I find it frome that the games that are freely available are precisely those in which I have little difficulty in finding a human opponent (and let's be honest, human opponents are more interesting than CRTs)

Adventure games, as far as I can see, can progress without limit, unless that limit is a purse.

The games I would like to see in software are those for which opponents are hard to find Shogi, Xiangqi Lasca, Fanorona Aminority taste, I hear you say? Perhaps. But again, if cassettes for these games became available, I think they would attract quite a lot of buyers You might opt for The Dwarf Apes of Jupiter rather than Wari, the West African form of Mancala - an easy game to portray and program, and a fascinating game to play - but enough would be tempted. I believe, to make the experiment worth some manufacturer's investment. And talking of Mancala, did you know that this is a game which a computer can be taught to play perfectly?

Adventure games, as far as I can see, can progress without limit, unless that limit is a purse. But there is one type of game that is beyond the reach of home computers and is likely to remain so for quite some time, the

multi-player game

You simply can't have a battery of screens and terminals and consoles and joysticks spread all over the hiving-room even if you have got room to stuff the computer in - and without personal controls, how are you going to keep your cards hidden, for instance? No if you want your £10 from each of the other players because you have won second prize in a beauty contest, there is no alternative to raiding the games cupboard



For your Apple-A Letter-Quality Daisy wheel Printer.

The brand new Brother HR-1 Receive Only daisywheel terminal. This is surely the best buy currently available for your Apple computer system.

Easily interchangeable 96 character daisy typewhee lavailable in a number of fonts and languages. Switch selectable 10-12 and 15 pitch. Printhead rides on a unique linear magnetic drive system eliminating motors, pulleys and drive belts. Modular construction ensures quick and cheap repairs – if they are ever needed – as experience shows that the HR 1 lives up to the highest reputation of its Japanese manufacturer.

The HR-1 is now available with either RS 232 or Centronics interface which includes a 2K or 4K buffer with X-ON/X-OFF. The printer is controlled by four microprocessors, prints bidirectionally and has a self-test and numerous other features only found in top quality professional machines. It uses universally available low-cost IBM typewriter ribbons with a capacity of up to half-million characters per cassette.

FRP £635 + VAT, optional tractors £75 + VAT, Apple drive card and cable

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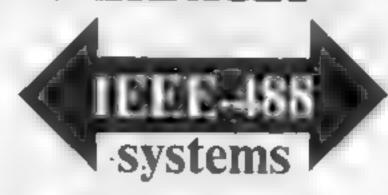
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da stanodist tittoree.

Manufacturers are now devoting a major amount of research to the 'design' of their systems – to compete in the marketplace. In September, James Woudhuysen looked at exterior design on the new generation of Microcomputers. Now he turns to program usability, or Software Ergonomics, and again concludes that the mainframe manufacturers are leading the field.

SOFTWARE

In praise of 'good manners'

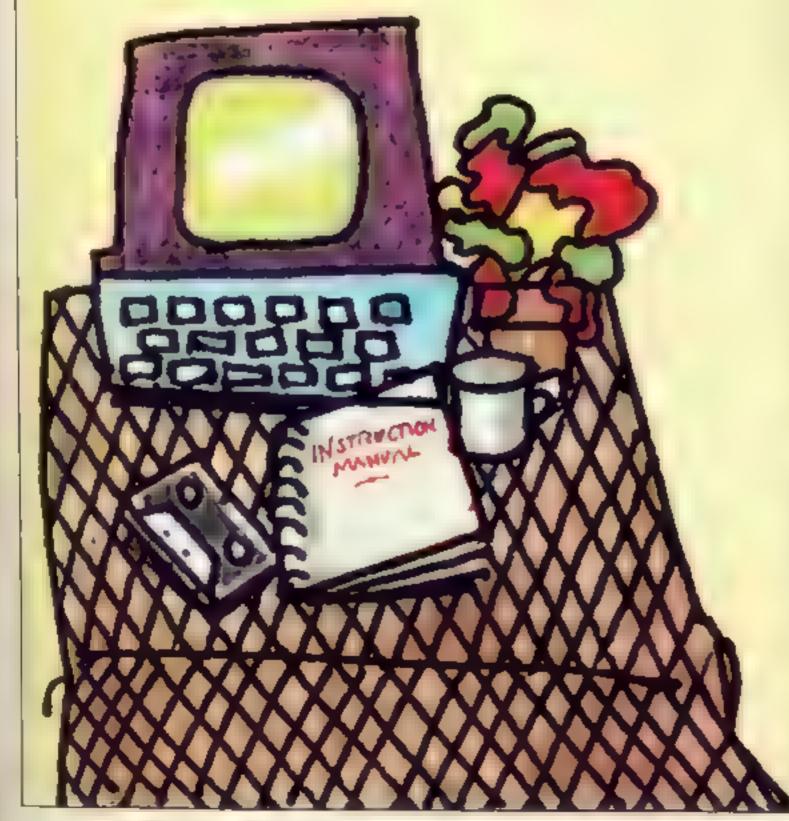
Ergonomics, the study of how man reacts to machines, is fast c imbing up computer companies lists of research priorities. ITT Europe now holds international conferences to discuss it IBM UK's laboratories at Hursley, near Portsmouth, are taking on more specialists in it. Meanwhile, a quarterly journal with the formidable little Behaviour and Information Technology (Taylot & Francis, £34 a year) has started finding its way on to the shelves of university ibraries and the National Electronics Councillis about to publish a report recommending that makers and users of information technology look at all the ergonomics aspects much more closely.

In a previous article ('Good design, a look at the ergonomics on micros. MicroComputer. Printout September 1982 page 48) suggested that, while mainframe manufacturers had largely solved the physical, hardware-based ergonomics problems associated with their machines. many micro manufacturers still had a long way to go to bring the design of their products. up to scratch. In the field of software ergonomics, however, the situation is more interesting. To will the invention of the microcomputer was a major breakthrough in user-friendliness - the whole idea of oneman-one-machine made computers much more acceptable to non-computer people. and did away with many of the complex operating procedures associated with maintrame time-sharing. Further now that computers were to be used by the man in the street, their operation had to be greatly simplified. The irony is, however, that it is the mainframe manufacturers, with their vast resources and research departments, who are now leading the held in software ergonomics - spurred on by the need to compete in the massive new micro market!

The little book that gets lost

First a note about a subject which isn't strictly to do with software in the true sense of the term, but which has more to do with it than terminal design: instruction manuals. Now a detailed survey of the manuals that go with today's micros will have to await another issue of MicroComputer Printout. But this much is clear, putting a manual together is an art.

Manuals continue to be written by people whose intimate association with the development of the product they are trying to describe renders them unable to see it from the user's point of view—and unwilling to test user reactions, too. This is why some users



SOFTWARE

only finding thow to switch their machines on once they guess that using up the page. pumber nex in the words Security Keylock in the inanualis odex will ead them to the relevant instuctions. Simple phrases like On-Offiseem to elude many manual writers.

The fact however that basic brunders ike this still about diddes not mean that clarity of exposition and ayout in manuals is simply a matienal correcting a few trivial errors. To get some lody liew to thicros even to pick i pla. marua, an be iffice in given how daunting one car look, and to prevent them from diliquing 4 hiexaspera ion alfewir nutes. aterican be next to impossible. Its notsur, so , either that many man ais get rush, especially when they reismal and badly. produced which is often the case St. There. are some rules to be followed, see burn.

Words, words...

Being interactive in a way that manuals are nut imputer schware , resents a rather different set of problems i a though both. simply written manuals and simply written. si fiwa e appeal as much to professionals as they do to an area is. Perhaps the most basic. awis, that to enrish uman computers must torgive. Thus a pringrain that hashed up the words.

INCORRECT COMMAND

every finile the user makes an everyday silp. keip iting woist ares between a por of words is eac of one is a program that a both infair and imministrately inote that capitais. are always more frightening it an lower case). On the other hand, a program that greats the entry

September 35, 1982

with the ro, y

I Think You ve Made A Mistake You ve Entered September 35 Which Date in September Did You Have in Mind?

s friend ier and genuinely heipt. As for a pring are able to convert your milino. ininial andon underground meteindicator. or one that co. ic come back on the transposed at they aled and four times misspull entry

Celn Ciphhem

with:

Limagine you meant Central Clapham , m alraid there is no such station. There's 1) Capham North

(2, Ciapham Common

(3 Ciapham South)

Please enter the number of the station. you wante,

would be a pleasure to work with Though. might raise your expectations a bit highly Software ergonomics as not just about forgiving human errors. The design of a

program most also take into account the number of people rikely to make use of it and the relative sophistication of their backgrounds.

Naturally too the design of a program has to reflect the infinisic complexity of the ideas. his trying to get across leastly program. design has to goard against errors.

particularly when the consequences of these can be dangerous. It makes sense to arrange for the words.

WARNING

Do you really wish to proceed with this course of action?

to be hashed up in order to avoid processing de aya or intelhevable loss of data.



You should be able to master it quickly

A manual should have a little so that you can talk about it with ease. The title, a onesentence explanatory subtitle, and the date should all be on the front cover. Thus,

The MagiMicro manual

Everything you ever wanted to know about Clobberdoor's best microcomputer

November 198,"

There should be a contents on page three, (pages in your manual should be numbered

A good contents page will look something like this

Contents	Page
How to set if up	4
How to use it	h
How to look after it	r
What to do if it ever goes wrong	
Further information	
Appendix A	
The story of MagiMicro	40
Appendix B	
Future MagnMicro Development	4.C ₃
Outck Reference Index	40

PLEASE NOTE

s instruction manual is for use with the Nobberdoor MagiMicro only

Information should be presented in the right order

As soon as you get through the contents page, presuming you want to start at the beginning rather than resort to the index pages straight away you should be told exactly what you need to know next, what you need to know next, and so on. Each step in the argument should be numbered

Late information which, directly or indirectly contradicts, qualifies or amends earlier instructions is a hassle. So is early information, fuse should I put in the plug? Can I repair any which you're forced to return to at a later stage and which, in the meantime, gets in the way of the information which you really need at that point it should be possible to cut a straight path, with no loops and dead ends

The information should be in a form which suits its purpose

You should be able to read your manual through from end to end, and at the same time use it for quick reference

There are other levels of information a soeither/or information which invites you to compare alternatives and make a choice. footnote information, which interrupts a sequence of information to make a general comment offer advice or to give a warning. stage direction information, which tells you the reader, how to use the other information.

The nature of each different level of information should be made obvious, by the choice of words, the choice of typeface, font and typesize, by the use of pictures and the nature of the layout. Examples of such choices. should be on display at the front of the manual. so as to subliminally convey their significance early on in the game. Giancing at the 'PLEASE NOTE: bit underneath the Contents earlier you've probably already got the feeling that you're going to run into this device again.

Any special terms should be defined early on explicitly and very clearly. Pictures that show a particular product when a point about a whole family of products is being made, are a bore

If something must be said twice, it should be said so in exactly the same way

Ideally, each piece of information should be covered once and once only. If repetition is necessary, or a 'condensed place of information is to be followed by a 'definitive one later the two should be completely consistent with each other. Same terms, form, of words heading and graphic style. Nothing put in the 'condensed' version that doesn't figure in the 'delinitive' one

Pictures should not repeat what is said in words, and vice versa. Captions should relate properly both to pictures and to the main text The titles and labels on diagrams should te up with the main text. Text should not be on one page and diagrams overleaf a common

The manual shouldn't try too

The second person "You will find that" rather than "It will be found that", imperatives "Turn to page to: for more information on and contractions, Don't rather than Do not are as useful. But they can be overdone. The same goes for 'stage directions', "Cut out this page and keep if with your ..."

A good manual gets you from ignorance to understanding fast, and includes the information which is vital but which is usually left out. How do I unpack the thing? Can I transport it with ease? What do my guarantee warranty and 'free demonstration cerds mean, and what should I do with them? What of my micro myself, and who do I get in touch with when it goes wrong? What are the manufacturer's office hours? These are questions that everybody asks but nobody answers

Most of today s program designs have one or more of the following faults.

- Poor language. A truchons should be short, straight and polite. Jargon jars. For instance, at the moment users of different micros sign-off on-screen with words like Logott and Quit which is silly A language should be compact, but powerful and not make too many demands on its user's memery
- Poor user orientation if helps for a fric ofo say west its doing either continuously or at the press of a key Examples are.

I'm working on your instruction Please wat a minute

if on world of it asserts the display if abs marcies line ien it is and the typetace size and for he weer by in use (plus the silematives if possible) it also beins to present courses of action in the form of alphabetical Menus. These should be Bullably lilled, for instance, London Underground Station Menu, and have the items on them numbered, and be completed by a simple Prompt such as.

> Please enter the number of the station you want again

Poor consistency, information ske

I'm working on your instruction. or messages to say you have made a mislake should be given special screen positions of their own - and those part in a should not change. The method behind

abbreviation should also be a consistent

one

 Poor user assistance. When the user enters Help he should get lots of it and fast The only qualification to this, is that assistance routines should be flexible. ennights illow action octobers to ake shir to be my Plear I know so going I HIT TO I PYTHOAPINDE AND DITTER DOES IN THE WALL LIVE THEY RECEIPTED IT AT IS rioty a disewio make the seat pritry. This it is the get kel men by the entry

HIPOTH SUBSTITUTE

Should be a t

White his contract to you need? " " " the day reform (him f)

- Poor automation and poor flexibility. rug - Jelea y to get it bugt a prog ac-THE RY THE PASSETY THE TO WE SHOULD BE avoided madd from the enought to be a r limber of G kerent synonyms, ava at mige inme works, and several ways of achieving similar programme grows bach varient. a list individual to with advantages in terms of Su while a partial are intra or sike 5 and needs
- Redundancy, Synonyms and a ternative w. ye at programming should not be eivider for heir own sake in they we Dilye reduingen in 756
- Poor reliability. The infinite aux: a. riskriputeric ilişenis should be comprehensive accurate and capable of only one in erpretation.
- Poor corrigibility. 4, should be easy to homeotic stakes Word processors for examine shored a low their users to store. the pieces of text they delete

...lcons, icons

Some of the biggest present day advances in program des un are embudied in Xerox si 8010 Star Information System On the Star the ciser can pick the objects that go to make. up his office brank paper pads of forms. documents ducument lies in trays out trays. printers, etc. and have them represented as able one inch square loops on screen. The screen than becomes a min ature desklop on which can be physically shifted about by use of a cursor and a simple Move key Needless to say, each icon can be opened. to reveal its contents, these are displayed in the accessible form of a 'window' that emporarily occupies most of the screen.

The point about the Star is that it is extremely reakship Working with it is very similar to working in an office. The Star takes advantage. of the fact that most people think spatially and it also allows its users to juggle a fol of ideas simulianeously, and without having to committee many to memory. But the Starapproach our betaken still turther Sponsored by the U.S. Department of Option; either Architecti re Machine Group at M.T. Boston. svegear hing computer user interfaces in which is which include maps a calendar a calculator a telephone viusoid ses movies and score in proprieted or a in conscreen and havigated around by means of a joystick



and window device or by add essing an NEF DP 100 Johner led speech Recogniser with verba, pom narids

Navigating over to the fixed calendar tells. the Recogniser tripre are lonear Lither commands with winds like salurday of them and and to home? ening out for calculatur. commands, ke Subvact, and not o contose. Saturday with the like sounding his run on Ado on eight either, in add inn the ise can summon ip's hole graphy a devices by oracommand Make a large green circle and manipulate them by an adjoit more) orainstruction Purifical there all 1 pointing with the aid of an on screen corsot housed up to secsors abached to the isers will the

casily speclarios which track the movement of the user cornea by infraired. clist \$10,000) allowishing in the selected to with nian accuracy of it's mpiry by looking althem With this set in 1.5 d.s. "Die matter n arrange for consito being upled plice they relooked at for iono enough.



Utimately MIT's experiments in software ergenomics could lead to 'media rooms supplanting terminals and to users turning into something akin to orchestra conductors. or air traffic controllers. But given that media rooms will probably only ever be available to the most high powered office executives, and given that the Star costs £15 000 to buy where does that leave software ergonomics. ir everyday micros?

The answer is that just for micromanufacturers to follow the guidelines set out above would be a major step forward in addition, however, there are a number of ergonomics areas which fruly progressive micro manufacturers ought to research for themselves. Here they are

Three-way dialogues between the professional user his computer and his customer throw up up ergonomics condundrums of their own. When, for instance a doctor uses a micro in front of a patient ergonomics is a sublie blend of eye contact. physical proximity inervousness and reassurance. A data processing detay of 10. seconds say might be tolerable for the doctor on his own, but a patient can find it a half biling experience in a surgery. These kinds of problems deserve analysis

Recovery from and anxiety about **errors** requires further investigation. When users make an error, they often try to get round the problem by repeating the routine. they just followed to see if and when they made a mistake - or in the hopes that their micro will get it right this time. Here careful scrutiny of user reactions could improve program design considerably

Word processor formatting could term lot better. Word processors should range words left and sums right, they should put decimal points in a vertical inelland they should arrow their users to scroll up and down and from side to side at variable speeds (better still, they should have a variable-speed page-turning system) All these features already exist on micros, but there are other relinaments to be made. At present for example, there are a number of different ways of inserting sentences in the middle of a piece of text, but none of them are really satisfactory. Both everlyping and moving the text that follows an insertion off screen (in leave the user lost. A word processor that reformats continuously - that is, those which take the text that follows an insertion and move it on one letterspace for every character. inserted - are by far the easiest to usr

Voice recognition and speech Synthesis need to be more fully understood Recognition involves the use of up mikes the rence from background noise. psychological problems (address a remachines as people) and of course operator error (IBM has found that untrained speakers get fired earlier than untrained typists, and that they make just as many mistakes) Synthesis involves mule switch co headphones, accents, lone dealness and a lot else besides. Mixing one with the other or with visual displays, is a whole new ballgame.

New you might say that micro manufacturers don't have the relie inch on psychological problems (three-way dialogues, error routines) and that they don! have the ability to make major technological improvements (such as the addition of speech interfaces) without passing on unacceptable. price rises to users. But as a rqued about hardware ergonomics on micros lusers. should - and undoubtedly will demand better software ergonomics from manufacturers. Sooner or later, micro lirms. are bound to rearise that good manners pay

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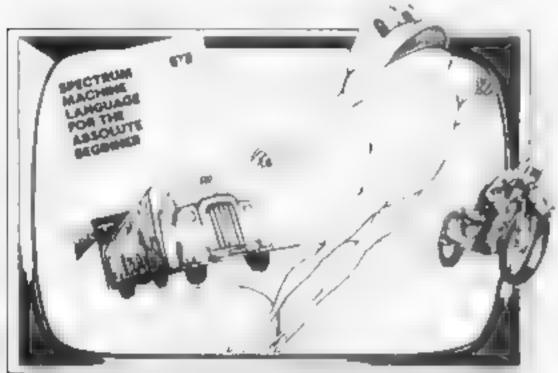
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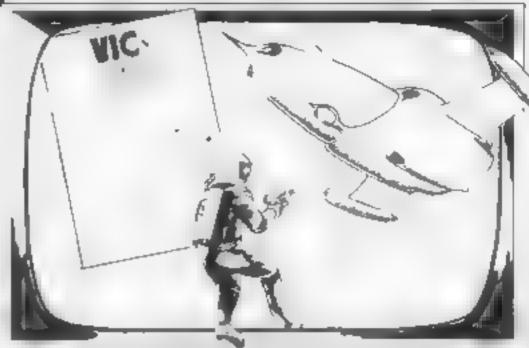
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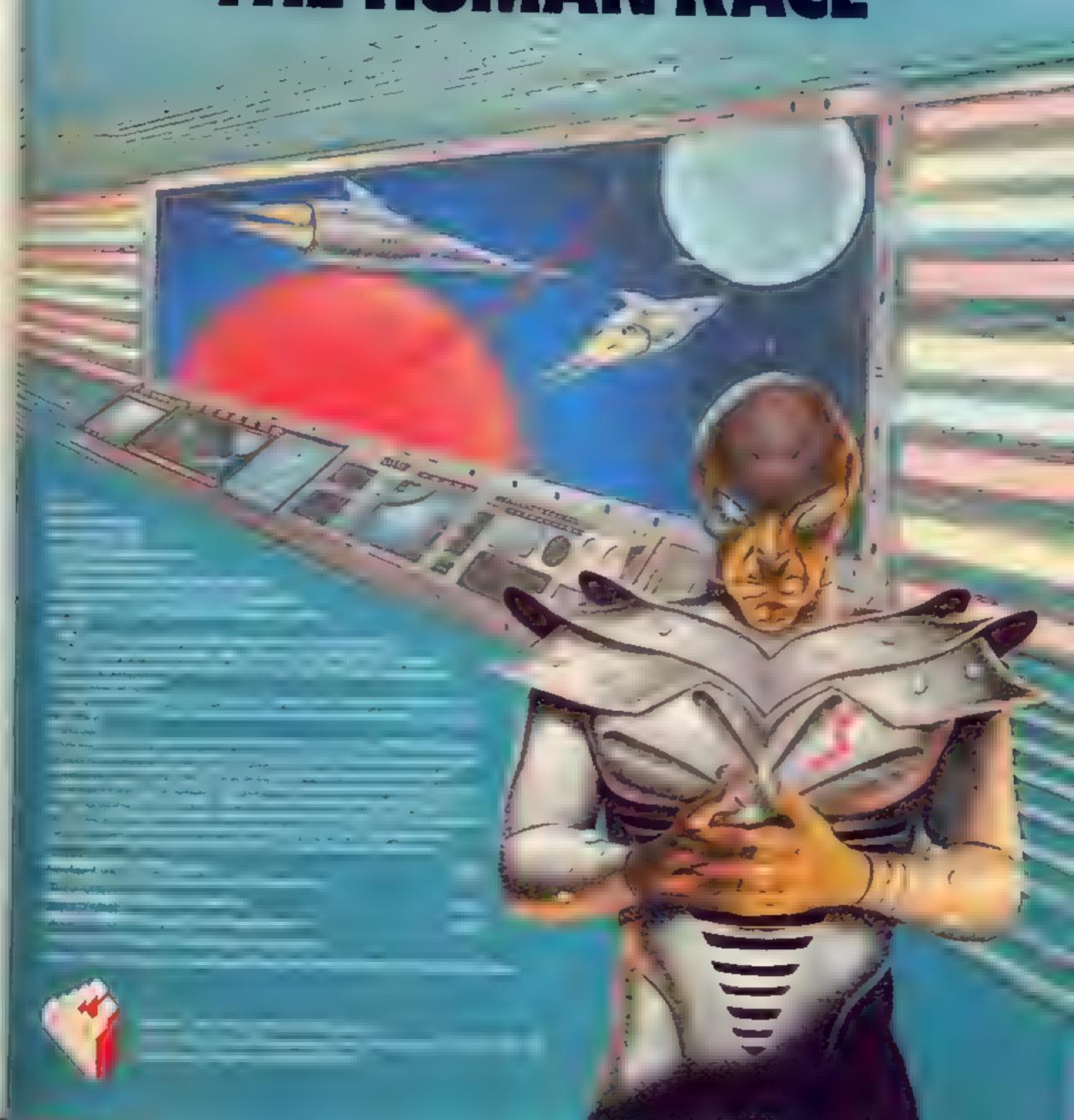
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TEXAS INSTRUMENTS





What can you learn about Business computing with your Home micro?

By Charles Christian

Once upon a time, and it was not all that long ago, the world of computing was a pretty straightforward place to live in. There were massive mainframe computers like the one in the film "The Billion Dollar Brain", taking up whole buildings, and there were minicomputers, each one of which could be mistaken from a distance for a convention of deep-freezers. Inevitably both had to live in special controlled environments. And they were strictly off-limits to mere mortals like you or me – indeed they usually needed whole teams of highly paid operators and programmers to get anything out of them.

Then about six or seven years ago, this whole cosy duopoly was turned upside down by the arrivation the scene of the microprocessor or – to use a hackneyed cliche—the advent of the ubiquitous silicon.

chip Suddenly we were all living in the age of the personal computer with initially Commodore Apple and Tandy as batting for honours in the marketpiace

Compared with the standards of today some of these early modets were pretty primitive -- grotty little "break your finger nails off" keyboards, poor resolution graphics miniscule internal RAM memories: a complete tack of useful peripherals such as even a modest printer, and an entirely inadequate tape-cassette recorder supplying back-up memory if you were lucky. Still it was a beginning and in a very short time it had stimulated the development of a thriving microcomputer software market with both games and serious business applications becoming available.



Big Versus Small

in time both the sophistication of the software and the hardware began to improve, but as this happened so a change came over the personal computer market

All one end there was the emergence of the professional business system with a big internal memory, high resolution graphics. large and highly efficient data storage on floppy disk, and more recently Winchester hard disk, a fast daisy-wheel type printer, and a capability for taking on all sorts of other tasks, such as data transmission. Armed with the well written software packages that are now available, these systems - for which you can expect to pay anything from between £3 000 to £6 000 - really are thoroughbred business computers, which have literally transformed the way some organisations run But, whilst all this has been going on, there have also been changes taking place at the other and of the market, with the same developments in technology being used to enhance what rapidly became known as the home computer Atari for example have utilised bigger memories and higher resolution colour graphics to produce what must be the ultimate in television-games machines - the Atari 800 - which allows you to play "Pac-Man" or Asteroids" just as well as in an amusement ercade

Then there is the Sinciair ZX81, which, with a 16K RAM pack, has twice the memory of the original £650 Commodore PET yet only costs £100. True, the Sinclair may only have a rudimentary keyboard and print out its hard. copy on what one of my correagues recently. described in "The Times" as looking like narrow-gauge silver toilet paper". But it certainly justifies Sinciair's advertised claim. that it is "the idea low-cost introduction to computing"

Joining Sinclair at the "bottom and" of the microcomputer market are such machines as the Acom Atom the Nascom 1 the Commodore VIC and of course the Atar. They are all legitimate microcomputers in their own right, they are cheap, and most of them have far more power than machines. costing ten times as much just a few years. ago. Furthermore, for anyone wanting a TV. games machine for the family or for the habbyist wanting to dabble in computing for the first time, they offer excellent value for money

The Thin End Of The Wedge?

But is that ail they are really good for? Or is there a halfway house somewhere in the personal computer spectrum where both ends of the market - the home computers and the business machines - could meet?

The traditional scenario for the man-meetsmicro-and-gets-the-computing-bug story promulgated both by manufacturers and magazines, has fended to drive a wedge between the two markets. It is usually something on the following lines: Mister Average an upwardly mobile sales executive with 2.2 children, a Caph with a rear windscreen-wiper and a semi near Camberley spots an advertisement in one of the Sunday colour suppotements for a small. microcomputer



.. is there a halfway house somewhere in the personal computer spectrum where both home computers and the business machines could meet?

As the idea of playing Pec-Man with the kids in the luxury of his own home appeals to him, rather than dicing with death in seedy arcades whilst local thugs knock the stuffing out of eath other with Newcastle Brown bottles. he kills in his credit card number and sends. off for one

He is probably shrewd enough to spot the fact the if he orders a couple of cheap "business" programs as well - perhaps a personal financial management cassette and one for stall slice - he might get away with putting it all down to tax as a deductible





expense on the grounds that it constitutes the purchase of "office equipment". (One word of warning, the Inland Revenue have got wise to this ruse).

After several months of successfully zapping the invaders from Mars, he decides one day to have a look at one of the more serious programs and – surprise surprise - finds it quite interesting "Gosh" he libriks must team more" and, after that, there is no slopping him as he wades his way through "Teach Yourself Basic" books and do-it yourself programming cassettes.

Eventually our hobbyist, gameplaying executive metamorphoses into a fully fledged micro bull and sets about astounding his workmates and confounding his competitors by ordering an all singing, all dancing microsystem for his business.

As for his original micro? Well, that either gets traded in as part exchange for the new system, or else gets left at home to gather dust in a corner of the attic.

So much for the scenario (but is it really necessary for there to be such a rigid distinction drawn between home and business microcomputers?)

h this and in following articles in MicroComputer Printout. I will be looking at the proposition that it is possible to move or from home to business computing by building up and generally upgrading your original hardware system rather than trading it in for a new system once you reach a certain level of soph-stication.

However first a disc aimer the sort of business-users I have in mind are sole-tracters or partners and directors in small firms and companies. I would not dream of suggesting as one computer manufacturer did recently that you could enhance a home computer to such an extent that it could "do quite literally anything from playing chess to running a power station". Believe that and you will believe anything.

Features in Common

The pertinent starting point for this thesis must be the fact that there is not, nor has there ever been, any significant difference in the level of technology employed in both the home and the business microcomputer. Look made some of the most sophisticated business microcomputers on the market and you will find one of Zilog s Z80 microprocessor chips at the heart of the system. Look inside the Sinclair ZX81 or certain versions of the Commodore 64, and you will find the self-same chip!

Leading on from this there are other similarities. Primarily because we humans with our pudgy fingers find them so much easier to use nearly at microcomputers nowadays (the ZX81 excepted), whether sold for business use or pleasure, feature standard typewriter like keys. Likewise the technology that converts electronic data into a visual image is just the same whether it is appearing on an integral VDU monitor or on your own domestic television set.

Having emphasised the similarities however it would be a mistake to think that just any home computer can be turned into a business system. To begin with, because you will inevitably be wanting to expand the

capabilities of the system, you will want to be able to expand its hardware configuration. And this in turn presupposes two things firstly that the system is from both a physical and design point of view capable of being expanded, and secondly that "add on" hardware is actually available for you to buy

significant difference in the level of technology employed in both the home and the business microcomputer.

By way of a quablication to this it is also worth remembering that with a lot of small businesses—particularly one-man bands - a home computer may give them all the computing power they actually need. A home computer can make a super programmable calculator, and if that is all you need and you have no intention of using it for book-keeping or correspondence, then there is little point in investing in lioppy disk systems or high quality printers. Never upgrade a system just for the sake of it or because you want to have all the latest gadgets - that is just a waste of time, effort and money.

On a rather pessimistic note it is also worth considering that your experiments with computing could just turn out to be a disaster Either you just cannot get the hang of it, or there seems to be no useful way in which you can incorporate it into your business.

Before buying a home computer you inlend expanding, you should therefore find out just what it has in the way of interface ports and whether there are any restraints on expansion. For serious business use you are going to need at least three things. A printer to produce hard copy. A floppy disk drive – because a cassette is far too slow and restricted in storage capacity to be of any practical use.

In a nutshell, you are looking for a home computer that can be upgraded into a business system.

(loading a program from a cassette can take 10 minutes or more, with a floppy disk it is almost instantaneous). And some form of add-on memory – a 16K machine that can hold 16,000 characters of information may sound very impressive but it is really not all that great when you consider that something as straight-forward as "Visicale", the financial planning program takes up 23,000 characters of memory. Consequently for senous business.

use 32K of memory must be seen as a milhimum, and 46K preferable

As to whether it is actually available, the problem here is that all too often a manufacturer's much vaunted per phera's turn out to be nothing more than a fightent of a catalogue illustrator's fevered imagination. Frequently, the announcement of the launch of new equipment is made prematurely whilst technical problems still remain or before a company can cope with manufacturing to meet large orders. People still waiting for their BBC Micros or their Sincian Spectrum's will understand pracisely this problem.



In a nulsher if you are looking for a home computer that can be upgraded into a business system you need to know what is available here and now, not what may be available at sometime in the dim and distant fulnte.

Why Follow The Expansion Peth?

I is of course one thing to argue that it is technically possible to start with a certain type of home computer and then upgrade it. But a rather different matter is whether it is actually desirable to follow what could be called the expansion path to business computing. There would however seem to be a number of advantages to such a course of action.

To begin with, by starting with home computing, whether for entertainment or educational purposes, you are letting yourself into the world of computing very gently rather than jumping in at the deep-end. Although it is a ghastly phrase that does little credit to the English tanguage, there does seem to be a phenomenon called "techno-tear" whereby quite intelligent people develop a mental block and are unable to operate pieces of new high technology equipment such as computers.

So, rather than being publicly humiliated in your own office, or having some only salesman sneering at you, whenever you accidentally foul-up the system, with a home computer



you can become familiar with its ways and hopefully master it in the peace and comfort of your own home. And at your own pace. A second point to consider is that to opt immediately for a fully-fledged business. system is, because of the cost factor, quite a major step to take. By going for a home. computer first however it is possible to start small and work your way up. And this can be particularly important if like a lot of small businessmen you suffer from cash-flow problems. For example, you can expect to pay in excess of £200 for a colour VDL monitor. for a computer system, but by making do with your domestic television set you can immediately deler this item of expenditure

Similarly Instead of being committed to the purchase of a lot of memory and at least two floppy disk drives - as you would be with a business system - a home computer enables you to build up memory in easy stages (the Commodore VIC for example has 3K, 8K and 16K piup-in memory packs) or lo upgrade. from cassette to single flooppy and then to dual floppy

Whatever the reason your unfortunate experience will be a lar less costly one if if only hybived a home computer. Far better to waste £500 on a home computer, which at east can siways be used by the kids as a games machine, than waste £5,000 on a business system that is no use to man or beast

Now Is The Hour

Many of the comments that have been made so far in this article would remain equally true whether they were said now or at any time. over the last couple of years. But recently there have been a number of developments. which tend to indicate that if you are intending to go for the home-to-business computing option now is the time to do if

There is, what can best be described as a new generation of home computers coming. onto the market. The Atan for example, now has a full range of professional peripherals. like a disk drive, available for it. the 16K expandable to 48K Sinclair ZX Spectrum will soon be available with microdive storage. and Commodore have just launched their 64" model which, as well has having 64K of memory and featuring nearly everything but the kitchen sink, is about half the price of what seems to be its nearest rival, the Apple

If the Commodore 64 represents the shape of personal computing things to come, the present distinction between home and business computers must surely start to whither away.

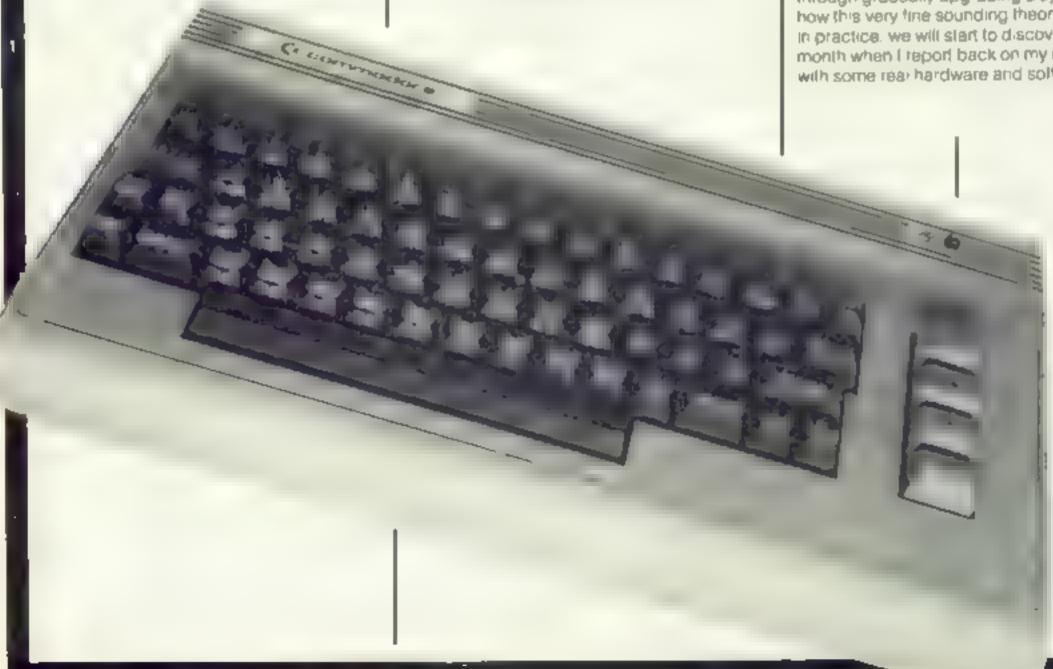
II, which has long been regarded as a senous basic business machine

These new generation machines also emphasise another reason why now would be an appropriate lime to invest in a hobby computer, for the software trade that supplies them seems to be coming of age. Initially for some systems, games packages were the only software programs available - and only on tape cassette at that. Now there are comprehensive business software libraries becoming available, both on disk and cassatte, for nearly all hardware systems. In this respect the Commodore 84 deserves a special mention, for as well as programs written specifically for it existing programs for the VIC and the PFT can be easily converted to work on it and, a special second processor option gives it the ability to support the CP/M operating system, making an estimated 1 000 further software packages. ava able

If the Commodore 64 represents the shape of personal computing things to come, then the present distinction between home and business computers must surely start to whither away

Finally.....

To sum up increasingly comparable technology and software is more relaxed learning environment a smaller financial commitment and allogether far less at stake it anything goes wrong a ladd up to some powerful reasons why serious consideration should be given to the idea of moving on from home computing to business computing through gradually upgrading a system. Just how this very fine sounding theory works out in practice, we will start to discover next month when I report back on my experiences with some rear hardware and solfware



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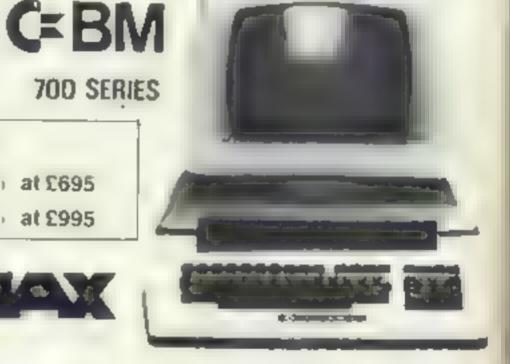
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ATEST CASE

Micro mastery might boost your business but your family wants a home computer. Can you combine both? And how hard is it? Terry Hope reports.

You re reading this magazine and that means you're affected (and maybe have been for some time) by the enormous increase of interest in computing. And there is an enormous increase

You know it. Worse, your family knows it. that's your fault for having a bright partner and smart kids!), and they re hassling you to put them at the leading edge of technology. too. You, canny person that you are, are wondering whether you can combine business with pleasure and acquire a machine. that'll be equally at home in both spheres

I'm going to show you how at least one relatively low-cost micro will be of rea, help for relatively modest business requirements. while being unarguably ideal in the home environment

At home in your Business?

Taking the home requirement first. Atari is an obvious choice, but could it possibly be a business machine too? Surely it's great for games, but would it really be any good for more commercial oursuits

With the arrival of several senous software packages specifically designed for Afair (and the imminence of others) the answer's 'yes. in fact, if you look carefully round you if beinterested and maybe surprised to find that Alari's almost the only popular micro with the software to make it ideal for home and smallbusiness alike

Best of all with a combined business and pleasure machine, you've no need to leap in at the deep end in terms of immediate. commercial use You'l need time to learn. your machine. What better way to do that than in your own home, at your own speed, in your own way having fun while you re doing it.

The remainder of this article will tell you about some of the business/serious software. that's available right now or will be very soon. what you'll need in the way of equipment, how much the software and the equipment will cost, what they'll do for your business (and your family), and what problems you may runinto along the way.

All the information is based on my own. experience. Liearnt the hard and sometimes. expensive way - what you a read here should make sure your learning process won tibe the same



BASIC BUSINESS SOFTWARE

The Bare Minimum

When say "basic business software", I mean ust that the barest minimum consistent with positively helping a small business. That means doing things more quickly and cost. effectively. It doesn't mean whopping great. payror packages, incred bie inventory controsuperb stock and supply systems, and so on If doesn't even mean the most wonderful word processing package and the damdest database bundle ever

I rloes mean a word processing package and a database system for starters though The reasoning sismple and it is the continuous theme through this article, what do you need as a basic minimum to be genuinely useful in the smar business and in the home, bearing. n mind that the latter is where much of the

i's perfect because you did all your fidding. while it was only on the screen

So what's all the word processing luss about? That's simple too, the more facilities. there are to move, change, delete, add, and otherwise mess around, the better the system. is supposed to be. I think that's debalable. It could just as easily be argued that large. numbers of facilities also make things harder to learn and gererally more complicated. Coming back to our domestic cum smabusiness usage however, I'd contend that a word processor was one of the two basic. nescessifies.

Atar is well-served in that respect and you lifind details of currently available word. processors eisewhere in this article

Now what s all this about database programs? Better what is a database? Hundreds of

the head by database tanatics, let me quickly point out that I said a computer database lets. you get at the facts you want. That's another significant advantage, a large collection of facts in a database can be examined. compared rejected or selected by the computer according to criter a you choose. If your database has 1 000 names and addresses in it, and you want to know all the Smiths who aren't named Fred but who do we in Maidenhead but not in Acadia Avenue if'll tell you. Quickly too.

It'll do the same for your wife's recipes or your childrens, record collection or your books it slust as useful at home as in the

Really good databases will even do calculations as data is being entered or later Thus if you've got a complete set of facts on all the things you set, and the VAT rate





learning process for a beginner to the computing game is going to occur. What's efficient, effective, economic and easy for a beginner in this dual environment? Hopefully 'Il supply some answers

Word Processing

First word processing. What will it do and why do you need it? I'm covering the basic. essentials briefly because the day before. yesterday I phoned 12 friends who all run. small businesses. I asked them all the same question. "Can you tell me what word processing is?" and not one was really sure Several said they diread a lot of complicated stuff about it but weren't any the wiser. That rittates me. Lots of writers who should know better come on with advanced prose descriptions, and forget that most of what they say is going right past the people to whom they re saying it

Now that sloff my chest, let me answer the question. Word processing is using your computer to get fast and perfect text, an neatly typed, without errors or bits you dilike to rephrase but for all the extra work involved.

How does it work? Simple A computer program lets you type on the keyboard and see the words on the screen. Then it lets you move them, change them, detete them, addto them, or do any messing around which might improve the whole. Nothing's printed at this stage – it all happens on the screen. When you're satisfied, you do two things. store your text, usually on disk, so that it's always available, and print it on paper. And

The 400 will cost you about £199 and the 800 about \$499 ... why should they be separated by a £300 gap?

thousands of words have been written about them. This magazine carried major articles on them. One appeared only last month and very good it was too. But did you read it right. through and feel it applied to you? If the answer's "yes", skip the rest of this article. it's not for you.

I dilike to come all dalabases from a rather more simplistic point of view. After all, the aim. is to get you using one, not deciding the whole concept is far beyond your needs and maybe even understanding. So how a this for simple analogy? Do you have a telephone? Yes? Even Better. How do you remember all their numbers? With a telephone index of some sort? Termic you're using a database.

Because that's all a database is la collection of facts that are related in some way. A Computer database is different in only a few ways lit tends to have a follower facts in it. than your telephone index, and you can get at the facts you want pretty quickly.

Since I'd like to avoid being beater found.

changes (pray God.), then your database we recalculate all the necessary ligures on command Useful eh?

Once again Atan is well-served from the database viewpoint, and you'll find delails of what you can get alsowhere in this article

The Computer

The computer is the heart of your choice Let's assume you've checked and that you have indeed found Atan is one of the only micros which has serious business software. available, as well as loads of more light. hearted programs

On that basis, you've two models available the Atar 400 and the Atar 800. The 400 will cost you about £199 and the 800 about £499. (I miguating the officidal list prices including VAT but be sure to shop around, you may well find the 400 and the 800 at slightly lower. figures)

Do make sure that VAT is included in the prices you see. There are still those who put the non-VAT price in big bold type with "Please" add 15% for VAT" in teerly letters somewhere else in the advertisement. It is a pernicious. habit in my view but it happens, so watch out for it

There are some differences between the 400 and the 800 but none that make any great difference to their computing performance. Why then should they be separated by a £300 gap? Let's look first at the physical differences.



Membrane Keyboards, Ugh?

The major visible one is the keyboard. The 400 has a "membrane" keyboard, while the 800 has a keyboard with keys. Both are laid. out in the familiar typewriter style, but the 400's "keyboard" has the "keys" embossed on it. The 800 has keys which are identical to those on a typewriter

There'll be those who, perhaps seized with memories of the Sinclair ZX80 or ZX81, with recoil from the idea of a membrane keyboard. If you re one then try the 400 s keyboard. before you make up your mind. It has a factile. teer to it. the "keys" are embossed rather than simply printed on, a very light touch is all that a needed to operate them, and there sian. audible "click" when each key is louched. I can actually touch type on the 400 but it'll beyou that's using it so it must be your decision!

The other differences? You'll have to buy Alar is Basic language cartridge as an extra for the 400. It's included in the £499 price tag. for the 800. Though some software doesn to need the Basic cartridge, you'll need it to do any computing of your own. Since it costs £50. complete with Atari's excellent manuais), this effectively reduces the difference between the 400 and the 800 to about £245 or so

Both come with the same amount of immediately available memory (16K in exact. ferms, it's the space in which you do your computing) so the question is therefore. whether the 800 has anything else going for it. which makes it worth nearly twice as much as the 400?

The 800 is probably nicer to look at It has video and audio outputs in addition to a lead. for straight connection to the nearest TV which the 400 also has

Can You Expand?

The 800 has two slots (against the 400's one). into which programming language, game or other cartridges plug. Almost all available cartridges plug into the left-hand siot. There are few so far aval able for the slot on the right. Does the extra slot justify the price. difference?

At this point, we're may be getting closer to he heart of the matter. Atar are a shrewd organisation and I suspect the right-hand slot isn't there by accident. There'll almost certainly be plans for it buried deep in Afair is Sunnyvale HQ in California

When (or if) those plans and right-hand slot cartridges surface, one thing sifor sure 400 owners won't be able to take advantage of them It may or may not be important, but it s something to bear in mind

What other differences are there? The answer really is central, 800 owners can easily expand their available memory to at least 48K by simply plugging in extra memory. modules. The 400's memory can be expanded too but it wasn't designed that way. Thus the 400 has to be physically opened and an expansion memory board inserted. Memory boards are available and the fitting isn't difficult but that's not the point

The key fact is that the 800 has been designed to get bigger if the user wants, the 400 hasn't. Thus the 800 s memory siots can take other things besides memory modules It is not in the scope of this article to discuss them. Sufficient to say that because of the 800 sintrinsic differences it ments serious. consideration if you think you'll get serious. about computing

SAVING AND LOADING PROGRAMS



A cassette may or may not require more memory a disk unit will certainly require an extra 16K for it's operating needs.

Saving Programs on Tape

The one essential thing you'll need is something to "save" programs you write yourself and "load" programs you buy ready written.

You'll need a cassette recorder/player for tape. It must be the Atan unit because its been designed to let the computer turn it on and off. It also has the near-unique advantage. of being able to play pre-recorded voice or music through your TV while the program is running - invaluable for educational programs. The Atan cassette unit costs about £49 and operates with the 400 or the 800. computers

Saving Programs on Disk

Disks need a disk drive a sophisticated piece of machinery hence its higher price around £299 for the Alari drive. Disks have. several very significant advantages over tape, not the least of which is that quite a lot of ready-written programs are/may only be avaliable on disk

There sone disadvantage to the Atan disk drive apart from the higher investment it requires the computer to have more memory. than it has when it comes out of the packing. box. If you don't add this memory, there won to be enough to run any but the times: programs

A disk drive therefore means more memory. realistically an additional 32K to make a maximum of 48K. This comes in two 16K. plug-in modules priced at £65 each

Because it is possible to add memory to the 400 too, a disk drive will work with either the 400 or the 800. I ve not mentioned the price of memory boards for the 400 because they vary prefly widely according to size and quality

Summarising Storage

Let's summarise the question of extra memory. A cassette unit may or may not require more. memory. It depends only on the length of the program you want to load. The cassette unit itself doesn't demand memory to operate

A disk unit will certainly require an extra-16K for it's operating needs to make 32K. total, and you may require an extra 32K according to program length, to make 48k. 1901001-

Thus on the one hand we have a £50. cassette unit and on the other we have a disk drive which, with extra memory, could involve. us in £429. It sounds like "no confest" but think about what you eventually want to do. with your computer before you make your mind up.

We re assuming throughout that you regoing to use it, however part ally, for busing You'll get famular with it at home - maybe even develop some of those business. applications there - and then start using it in your office. If that's so, you'll probably acquire. fairly sophisticated ready written software (see the sections in this article on. Word. Processing" and "Data Bases")

This won't be available on cassette which means that though you may only go as far as a cassette unit and 16K memory at the start you'll want a disk drive (or even drives) plus more memory eventually

This could affect which Afair the 400 or the 800 - you choose. That's why we're mentioning if now

PRINTERS AND PRINTING

What Sort? What Size?

The last thing to consider is whether you're going to have a printer and if so, which one

For normal home computing, you may not want one, though it's useful for program. listings from time to time. If that s as far as you plan to go, the Atari 822 thermal printer w be fine. It costs around £ 98. However, for business use (and ut litar an home use too), a more versatile printer is a "must" and nothing. iess than 80-column will do

80-column? Sorry about the "computerese"! All it means is the maximum width the printer. will handle. An 80-column printer lets you. print a maximum of 80 characters in one line. which is sufficient for most business. applications.



If you re thinking about an 80-column (or wider) printer there's one essential item to think about first - the Atan 850 interface. Module. This is a flat box of boring appearance. which goes between the computer and some peripherals, including the larger printers. It quietly does a multifude of essential tasks in our present context, it lets a dialogue occurbetween computer and printer

tis not needed for the small thermal and (which plugs straight into the computer) but bigger printers are totally dependent on it The 850 Interface Module costs £135 and that needs to be added to the cost of whatever printer you might decide to have

if that makes you paie slightly remember the 850 will do a lot of other things too. None will be immediately useful to you, but it's heipful to know your £150 will eventually let you do a lot more than connect a printer!

The Great Atari Printer Mystery

But which printer? It is a good question. Not too long ago the Atan 825 80-column printer mysteriously disappeared from the catalogues, apparently leaving Atan owners without the possibility of moving up to, or acquiring outright, an Atari-brand machine.

However all was not as it originally seemed for the Atan 825 was, in fact, a Centronics. 737 printer in disguise. The model supplied for a time in the UK was the Centronics 739. an up-dated 737. It was a fairly versatile if so jittly noisy machine with a considerable range of typestyles and other options under Designam control

These included a good proportional typeface (one where the letters occupy different widths. Thus the "m" is a lot wider than the "i") which came very close to letter quality. Effectively this means you probably wouldn't be worried about using it to write to your bank manager

The UK supplied Atari 825 (or Centron 4.5. 739 - same thing) cost just under £540, so of all the items you might buy it was the most expensive. The ultimate cost was, of course round about £685 with the Interface Module iric uded.

Gone Without Trace!

For some reason now though, Atari have dropped an 80-column printer. It's vanished as if I had never been. This effectively means they ve dropped Centronics. This is very odd because the Atan Word Processor (see the "word processor" section eisewhere in this article) is specially designed to work with the Centronics printer and effectively only the Centronics printer. Thus Atari are marketing a £100 Word Processor without a printer to go with it

Why have Atan dropped the Centronics printer? I ve no idea but it gives food for thought if you re thinking about buying one The Centronics 739 is still available, and Centronics (a large American firm, originally known for their pioneering work in printers for micros) have a big place in Burgess Hill Sussex

've been told of rather bizarre and frustrating incidents connected with Centronics service and service charges (chapter and verse will be supplied if Centronics are interested) so that may be something else to bear in mind when you consider what printer to get for your Afair

So What's The Choice?

What other printers are there? Another six or seven different makes is the answer so Atar. users aren't without a considerable choice compare that with some other leading. FORMARIA,

Once again, sorry but its not within the scope of this article to look in depth at every one available. We'll do that some time soon. What we can do is mention at least two of the printers and leave it to you to have a closer took at them.

There's a reason for our choice of the two penters and it's a very important reason there's business, graphics and home software on sale right now for the Atan which has been specifically designed to operate with these two makes of printer. That's important

... for business use, nothing less than 80-column will do

there's little point in having a printer if there's no software which recognises its characteristics.

The Epson Printer

The first and most obvious (because they reso well-established and have so many models) is the Epson printer. It is inexpensive performs beautifully has lots of features not found in printers costing more, and represents value for money. It doesn't have a proportional typetace but otherwise it has a iol going for it Tile Mx 80 w cost you between £343 and £385 according to whether you only want to use continuous computer paper or single sheets as well from time to time (and you might for letters and such kc + One word of caution, if you choose an Epson, make sure # s a Type II the alest mod There are a guite a few ear ier models floating about

The NEC Printer

The next is the NEC 8023A which is also a very nice printer. It set that the life is mile less sturd by built than the Epson, but the was probably only a result of the top cover which liexed very slightly when being removed or replaced. It is not something to worry about The NEC does have a proportional typeface and their very good one too. The NEC will cost YOU SOund £375





THE COST

Let's Add it up

f you've read this far (and I hope you have nothing wornes me more than an audience getting up and leaving half way through!) you may be feeling that it's all going to be a bit too expensive. Worry not, that is a normal reaction when confronted with a mass of facts and figures.

Let's actually summar se the likely cost based on the assumption that you'll go for an Atar 800 a disk drive the extra memory a orinter and probably a cassette recorder

Atan 800 computer	499 00
Atari 810 disk drive	299 00
Additional 32K memory	130 00
Total cost so far	928 00
Alan 850 interface Module	135 00
Epson MX-80F/T (I (example)	385 25
Printer cable	25 00
Total cost so lar	1583 25
Alari 410 cassette recorder	49 45
Final cost for the package	1633.70

Don't forget that the prices above include VAT. Take VAT off, as you may be able if you're buying through a business, and the cost drops to around £1325. And, of course if you settled on the Atari 400 instead of the 800, there's another reduction of around £245 (or more if you exclude VAT).

Your Money's Invested 3 Ways

Now this isn't a small investment of course but don't lose sight of the fact that the whole point of the exercise was to acquire a computer that would serve a Imple purpose to provide your family with computer knowledge and use ito let you get to grips with computer technology and experiment with the best ways to use it in your business life; and to provide a computer that would be genuinely valuable in a business sphere

On that basis, you may wer think that the investment is not only justified but reasonable. Shrewd businessman that you are you!! undoubtedly check prices and abilities and you!! find two things, few other "domestic" micros can serve such a dual purpose, mainly because the business software isn't available for them, and that few if any, "business" micros are of much value in a purely domestic.

environment because they lack appropriate software and don't perform in an appropriate way

Which leads on, naturally enough, to the business software which is available for the Atar

AVAILABLE SOFTWARE

As this article is being written, there's atready a significant number of sophisticated business-type packages available for the Atari. The significance lies in the fact that they re available at all – I know I im repeating myself but a check on other popular "domestic" micros apparently designed for home use will demonstrate that very few have word processors and database software available right now

And let's mention just once Visicalo, the world's best-selling business program. Of course it's available for the up-market machines like Apple, the big Commodores, and others in that category. For how many "domestic" micros is 4 available? One and one only – Atari. That single fact speaks volumes.

But let's first look at word processors and then databases. There isn't space to provide a detailed review of the facilities each has. A full article could be devoted to each one. If therefore give a rapid overview plus my own feelings. Remember they re my impressions. Though they re-based on experience, things that I distike may be loved by others!

The Atari Word Processor

The cost is £100 (£99.99 actual), but we won't argue about 1p will we?) and the packaging is superb. Documentation is also consistent with Atari s incredibly high standards. It's disk based (as are virtually all word processors) and Atari thoughtfully provide a duplicate back-up disk in case the original ever gives trouble. They also provide a third disk which has recorded on it all the text used in the instruction text. This means you don't have to type it in yourself – nice touch. Also included is an audio tape on which a nice friendly-sounding American gentleman chats you through the training exercises.

I tike the word manipulation abilities – you can delete things in a large number of ways. I don't like the fact that you can often do it without meaning to. There is a key that restores the lost text though, providing you're still on the same line.

I hate—though the feature is intended as an advantage—the amazing amount of time the program takes to formal and paginate a document (formatting and pagination are what happens when the final size, shape and page length of a document are determined in the Atari system). Though you the the diversion of being able to watch it happen at machine-code speeds on the screen, it's incredibly time-consuming and very boring after a while

However leaving all other things to one side, it seems to me that the Atan Word

Processor is damined entirely by the fact that Atari nd longer sell a printer to go with it. A word processor without a printer is as much good as a car without wheels, and it'll go about as far too!

Datasoft's "Text Wizard"

The correct stiprice is £72.80 though I versions them advertised at £99.95 (obscene that six what it costs in doi are in the USA1) and at £69.95 (good – competition is healthy!) For that money, "Text Wizard" represents remarkable value, especially the atlest inversions now appearing in the shops. You get a double-sided disk and a very luxuriously bound manual. One side of the disk is intended for the Epson printer and in the atlest version of "Text Wizard", the other side is intended for the NEC printer. Ear ier versions of "Text Wizard" were configured for Epson and Centronics, which te is a story!

I like the extensive use of colour round the screen border and occasionally over the whole screen to warn you of situations of which "Text Wizard" considers you need to be aware. This has meant I ve never accidentally lost a word, let alone a page of text in the many months I ve been using it.

Formatting and pagination take iterally no time – you do it as you go with simple codes in the text. It also like the fact that regardless of how wide my printed text is going to be the screen text is always totally in view and therefore very easy to check for errors (Alar forces you to go through a special format process if you want to read your text without moving the whole screen "window" left or right).

Another excellent facility is the ability to change format or typestyle (printers always provide several of the latter) anywhere in the text – even in the middle of a line if required. This is impossible with the Atari word processor, but it is a valuable feature.

Finally I have it on good authority that Datasoft are about to release "Spell Wizard to link with "Text Wizard". Spelling checkers examine word processor text and highlight errors by comparing every word with an internal dictionary. "Spell Wizard" will apparently be priced at around the £55 mark but even without it, dirate "Text Wizard" as a very good word processing buy

The CCA Data Management System

This American database is occasionally advertised in the UK and I have a copy (which I had sent direct from the States a long time ago when I first changed my computer to Atan) so I'll mention it briefly.

Briefly' because I have to say that it's one of the worst databases I ve ever had the misfortune to use. There are – or rather, were – many things I didn't like about it (including a numbered message system that is the heart of the database operation and which makes. Attributed messages look, like a course in clear communication) but towering above all the others is one astorishing and disabling deficiency. When searching an existing database to see whether or not a particular.



piece of data is there it is necessary to indicate with great accuracy what the data is before the search can be carned out.

This is akin to mislaying your watch in the house somewhere and your wife saying. To me where you mislaid it and I'll try to find it for you. The obvious reply is, "It i knew where I'd mislaid the damn thing it wouldn't be mislaid would it?" I queried this curiosity with the American firm marketing the database but they didn't bother to reply to my letter.

I should give the CCA Data Management System a miss if were you

The Atari APX Data Management System

This is a very simple and straightforward database system, available from the Atai Program Exchange list. It costs £16 which is of course very little. At the same time. I due think Atan will mind me saying that nice though the program is, it isn't exactly a heavy weight database contender. Look on it make as a min-card index.

Synapse Software's "FileManager 800+"

"FreManager 800+" costs £ 72 80 at the moment. I'm told there's an increase from the USA in the pipeline which will move £ 1/£ to around the £89 mark, but that hasn't reached the dealers yet. If comes on a disk with a duplicate back-up on the reverse side. If accompanied by an incredibly clear and easy to lollow (as well as intentionally amusing and light-hearted). 104 page manual enclosed in a dark blue ring binder. I've used. "FreManager 800+ for a long time now and in a phrase, I love it! It's been written especially for Atan alone, and so it makes full use of at Atan alone, and so it makes full use of at

It sinct necessary to extor its virtues others have done that aready. Let me quote from the September 1982 issue of Compute a highly-respected American magazine. If



carries an article about the making of T or the atest wait bisney prockbuster. This pid agraph a prears in the after A, the thiousands of sound effects irreafer by the carriagued on an Arar with Frields age 8004. The reconstor any sound of ectioning its characteristics, soulce as it ocar in or tiple como be and event in the reconst.

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A LAST WORD

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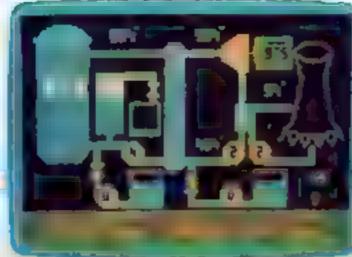
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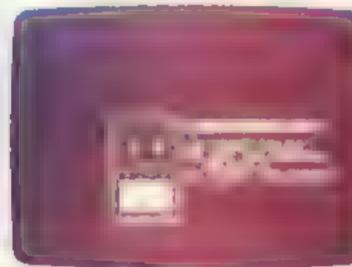
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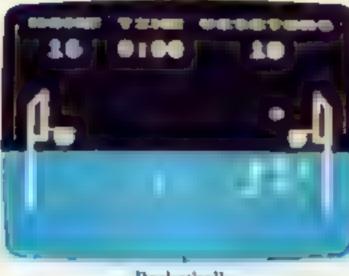
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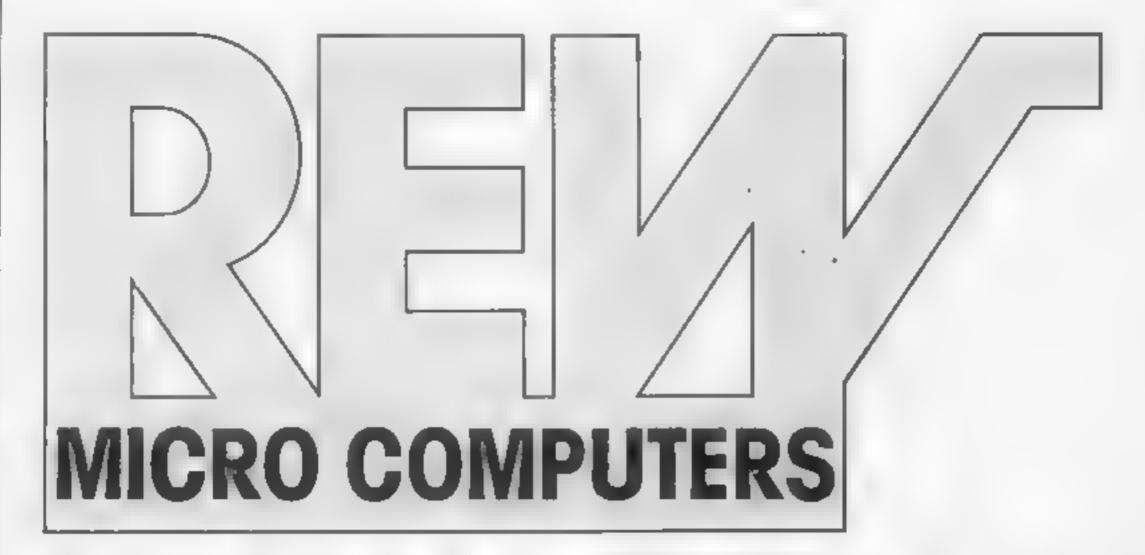
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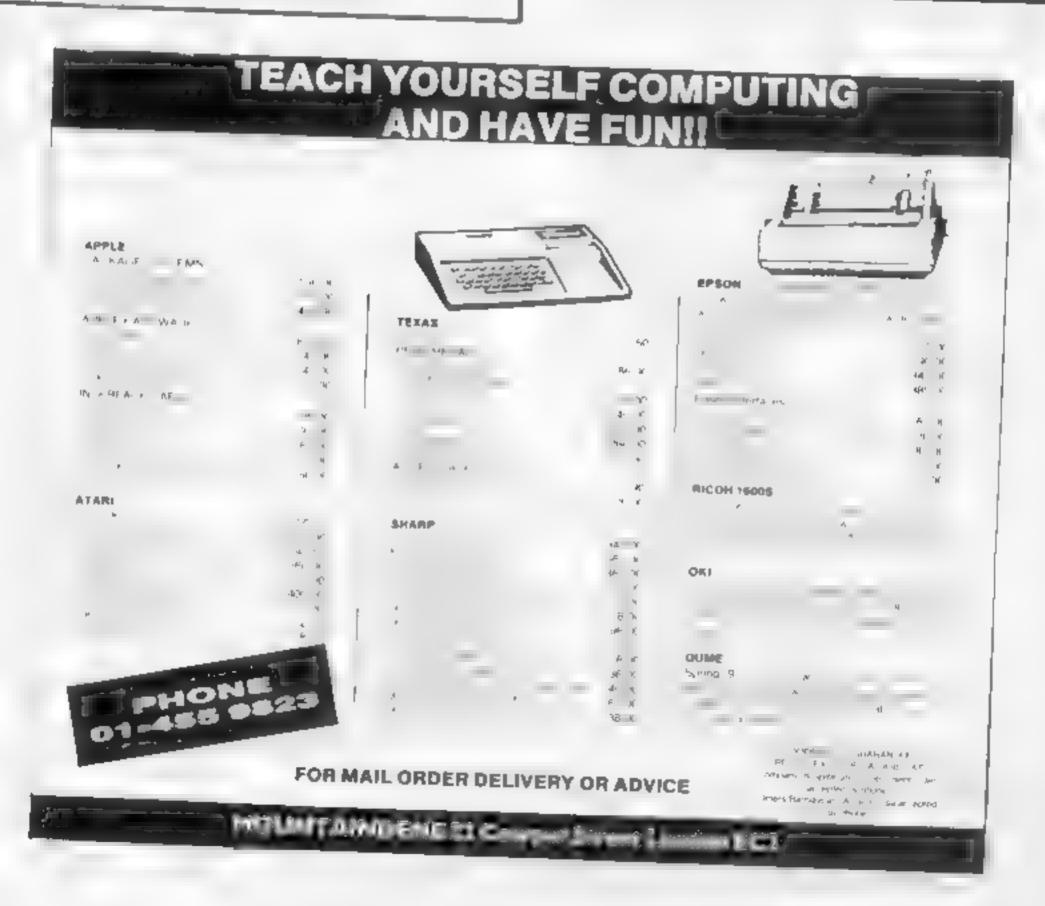
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An ANS '74 standard COSOL sumplier fully splittered by \$1.0. News tions to Addit time! 1. The complet day paperts many flatters of time! 2 installing dynamic healthy of COSCI, manifest and a hellinger of Brownish (ISAA); to,

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P is all bitmaring programming language which were for with Highlite applications, a second second second second

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DATA MANAGEMENT SYSTEMS

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HOMBYSHIRS

Roblem ann

Time Please

Dear Tommy

In the June '82 issue you give a program for measuring reaction times in milliseconds rather than jittles using the PET keyboard space bar for responding. I have two questions arriving from this

1 Can push buttons connected to the User Port be PEEKed' instead of using the keyboard, or does this introduce unacceptable delays compared to a few milliseconds?

2 Can the program be altered to 'POKE' the User Port so the PET works as a pulse generator with eight output channels, or is this also restricted by the time taken to POKE and output

W C R Withers

To use the User Port it is necessary to tell the PET which of the lines are to be used as inputs and which as outputs. This is done from BASIC or assembler, by storing a value in location 59459.\$E843. Each bit in the value corresponds to one line of the user port, if you have a one in a bit position, that line will be programmed as an output if you have a zero than that the will be an input. Here are some examples

POKE 59459 0 Al. lines input POKE 59459,255 Alclines output POKE 59459,15 Lines 0-3 outputs lines 4-7 inputs

The program can easily be altered to read the user port, by replacing the instructions from locations 340 to 344. Depending on how you arrange your hardware, the bits may be normally low and set when you press a button, or normally high can cleared when you press a button. Assuming that they are normally low, you would need the following instructions.

0340 AD 43 E8 0343 29 01 0345F0 F9

LDA E843 AND #1 BEQ 0340

The AND statement in location 0343 selects which of the user port tipes you are going to test

All this could be done in BASIC, but of course you will not get anything like the resolution you can get from an assembler routine.

As far as driving outputs from the user port to form a pulse generator, again you can do it from BASiC, but at the best you will be limited to frequencies less then 30 Hz, that is a period of 30 ms. Once again assembler rules

Let me repeat my favourite warning that you must not connect things to your PET unless you are absolutely sure you know what you are doing. It is very easy to hurt either yourself or your PET if you are not careful.

Shifty Characters

Dear Tommy

I have produced a price list program. The various descriptions of the items call for many commas, but I cannot save these on disk. I have evolved a rather clumsy routine using GET which screen and saves a shifted comma, the shifted comma is changed back into an ordinary one as the data is INPUT from the disk

Is there a better way to get my PET to accept commas, preferably using INPUT? And why hasn't somebody produced a BASIC without this infuriating and seemingly unnecessary feature? Or have they?

Stewart Forbes

Well actually somebody has MBAS C, the version of Microsoft BASIC which runs under CP/M has a statement caked LINE INPUT which does not suffer from this handicap. I suppose that this feature is vaguely useful if you want to enter three items with one INPUT.

100 INPUT A\$ 8\$,C\$

to which you might reply

TOM, DICK HARRY

but in my humble opinion, its disadvantages far outweigh its advantages. Now how to get round it. As far as keyboard input is concerned, there isn't much you can do about it, but then you should be using GET rather than INPUT for any

serious application anyway

For disk input, there is a tiddle you can do. You have to use fixed length records, but again in a serious application the this you probably will be doing anyway. Si prose that your disk hie has records 60 characters long (not including the carriage return), if you try to INPUT# a record with a comma, then you will get a short record, as you have noticed So you can tell from the length of the string you have input that something is wrong, and go back and get another one like this.

SAS MA MEM RA R. MT TH NO TO NOA N. THO AC NO.

SAS TE AS AS TO MORE OF SHOW ON HOUSE HO.

AS THOSE MA SO THEN RETURN MOMENTA WAS NO AMEDICAL TO A MOMENTA REPORT OF MOMENTA REPORT OF MOMENTA REPORT OF MOMENTA REPORT OF MOMENTA.

This routine does have the disadvantage that a colon () also causes this effect, so that any colons you record on the disk will be magically transformed into commas

Hazy Strings

Dear Tommy

I refer to your isting of the program 'Anagram Cracker which I have put on my Sharp MZ 80K. Unfortunately it was not until Trail the program that I readed lines 95 and 685 have only 2 arguments for the MiU\$ statements and the Sharp requires 3 if am a little hazy as regards exactly what a MiU\$ does with 2 arguments. Could you please help in providing a procedure for Anagram Cracker that would work for the Sharp.

John Hunts

in those BASiCs where the third argument is optional

MIDS IAS 5,

s the same as saying

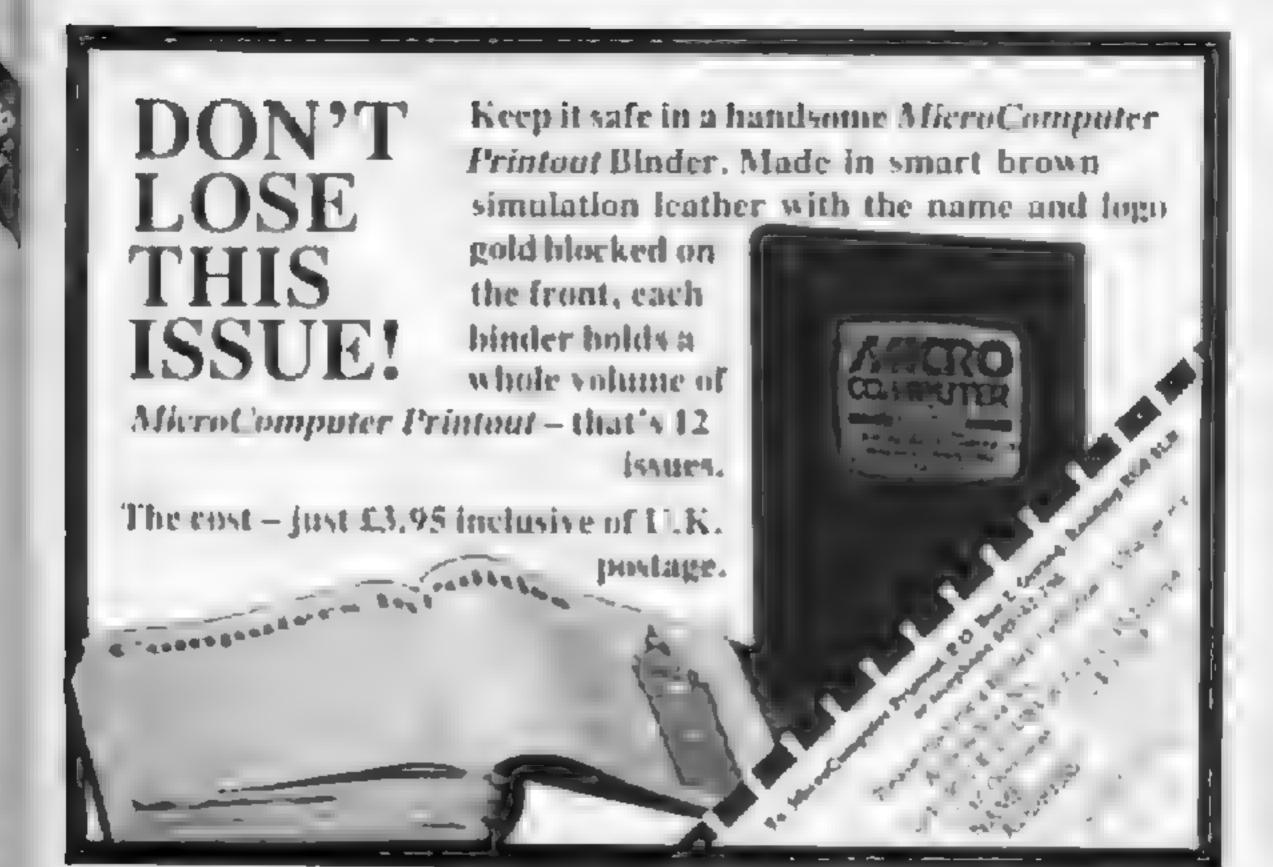
M(D\$ (A\$ 5.255)

that s

MID\$ (A\$ 5 LEN (A\$) ,

The effect is to say itake the whole of A\$ from the 5th character onwards, which is not quite the same as the RIGHT\$ statement, which says, "take the 5 rightmost characters."

Try this with various strings of different, engths to see what it mean.



Dear Mr Newsagent,

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Thank you.

Yours sincerely,



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EXPERT SYSTEMS

'Expert Systems' are the most practical products to have come out of research into Artificial Intelligence. Using a limited knowledge field such as medical diagnosis, and Expert System will provide useful answers to questions in the way that a database can't. John Gowans examines the way in which such systems work.

Artificial Intelligence

the their reasons y tool daily in the year of the start in effect the start in discountry and the right will complex questions based on it

Bull compared with full artificial intelligence with the life, if a complete the mimic the behaviour of a complete the life to the property of the life that the life that the life that the life and the life that the life and the life that life the life that the life that life that life that life that life the life tha

No. an expert system just has to have a body

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The trisist, a clearly half or putting he non that it is the human appears that and the one to the control trends of the and the area and the may be the again which is he he all the may be the way. Or remediately the time and the may be the way. Or remediately the time added as the fully connecting the time added as the fully connecting the time.

Te per way at 1 x the 1 / be is that it spe

by lesser writers and by Inmos as Occam), is to combine the knowledge and the governing. ules in the same set of if then statements

The idea of this is that it mimics the way human beings solve problems. For instance, would bel that none of my mynad readers works from first principles when asked a question like "would you like A Bran for breaklast lodey " A: that you do is place the situation against set rules, such as "if A. Branyesterday, then no A. Bran today", or "if bowe movement in ast 24 hours, then A. Bran s. out" This kind of rule is the kind of thing the logical computer thrives on land as we have said is the easiest way of making the machine. oak bright

Logical Deduction

If you spend any time thinking about thinking leaving aside De Bono and his significant simplifications this will be obvious. When you put salt on your ohips you don't think that here is a fortuitous combination of sodium and chloride ions, electorically bonded. That affects a certain area of the fongue in a certain way No all you do is think that the last time you pul salt on some loodstuff or other il lasted better than 1 did on the occasions you didn! Logical deduction and the scientific method. are just over ays on this method of thinking and not the precursor of it. So to save ... getting too turgid (swoi en en arged, bloater) puffed up or out according to the esteemed Synonym Finder) all this is leading up to is that artifica, intelligence assumes an educatio about the world in tiny quanta of fundamental act Expert systems just take the rules that have been shown to work in the world, without worrying about reality or fundamentals, and if the assumptions behind the rules are wrong they couldn't care less. Now that s what I (a) pragmatic

Getting the rules into the computer system. means interviewing the appropriate experts and going through the appropriate reference. works in some detail. The digesting of the information into rules also takes time if you are going to be anything ike comprehensive and the amount of rules mounts up depending or the area you hope to cover. To give some examples, a specialised medica diagnosis system for blood diseases has about 450 fules, another system to configure DEC VAX. 11 systems (not design them, just configure them) has about 800 and another that predicts the like hood of mineral deposits in geology has about 1 600.

And these rules are not just 'if that then that types. Each rule has to have a weighting attached to say how ikely the then' is for a particular if. For example if a wife comes home and finds a naked woman in the wardrobe, it is very likely that her husband is guilty but just possible that it is his sister looking for some lemporary clothes while hers are in the laundrette. Then again, a little heap of soil on the lawn is unlikely to be evidence of a burrowing extra terrestria organism on a tourist trip to Earth, but it is just possible. Morelikely to be a wormcast, but not definitely. You

But compared with full artificial intelligence systems, where the computer is expected to mimic the behaviour of a complete human being in every set of circumstances, expert systems are easy to program.

car wit assign the same probability to at the ter to the property of a

Specific to the good of the territories ers it is followed as a second part of the Thate a rice of and a particular to the second of the seco reading 1th this then 28% probably that

Learning Capacity

Rules of this type make up the knowledge 1 2 4 3 finday - 18 ye y x e ge 3 5 fe y ntelligent not very expert expert systems. But the round soulth appear on the by no means conventional. In a conventional program the code listing is the whole it no and the input data from keyboard, disk, or wherever just stots into the code. But in an experf system the program comes in high and hirst there is the rule base, the set of its and thens that represent the knowledge. Then there is the fundamental program, a set of

One odd advantage of expert systems is that you can give them an answer and ask what the question should have been.

code that interprets the rules in the light of the pull data, which is the third element in the

in this system there are elements of feed back as well-giving the expert computer some earning capacity. For example, the answer

particular question from a user can be added - the knowledge base - which gives a new ie saying "if this question is asked then the -the answer to give." Which might seem conmiluted, but it is not that bad from a program mind point of view.

in this way the database of questions asked can be added to the knowledge of the system and related to the set of rules to give extra trategies to answer more question

Now a. this might seem very any lary of irty-farty if the Editor (may his potency never decrease) lets that through. But as a tificial in I telligence systems go expert systems are doing preffy well, and you can even buy them to run on a micro. One hame to watch is be which has its MicroExpert package on the narkel right now feature y the initial ons of micros appry to such products in the same way as they apply to database management sy-

not surprisingly since the two types of program have a lot in common

Those limitations are in the size of the know edde base that can be stored on floppy disk. in the complexity of program interpretation and teedback that can be implemented, andthe raw speed of the machine in searching -knowledge base to seek out one or more inswers to a particular query

n other words, it would be no use to use a micro to do the job of a GP in diagnosing just jour every disease under the sun or in the man acadeases, under the moon, B. t. " wid be OK to set one up to answer quille

In . Imps and first day covers of the acitic and Atlantic is ands, and so put my dad. rut of a job. Sorry Pater, but you might still be sble to act as input data.

Inferences

But how do expert systems differ from database managers in their response to jueries? Quickest way to explain is by example I'm atraid. With a database you might ask it "How many of my employees have moved house bought new call in the last thiele. months*7 and receive the correct answer of 42" with breakdowns. I particl at names if necessary. With an expert system on the same. ob, with data on tax dodgr - mortgalge till issalary levels and so on, you might ge the inswer 142, with a 26% plobability of expenses fiddling by Rumpole and just about everybody eise a 4% probability of embezzlement by Pawson (no relation), and a 0.001 probability of anyone buying a car will his or her own cash." Note the extra detal sland the drawn inferences on the basis of existing. data and input

One odd advantage of expert systems is that you can give than an answer and ask what the question should have been. Or to put it another way, you can use a goal-driven



MICROSCRIPT

More Space than any other Commodore Word Processing program

Ask your Commodore dealer for details In desperation phone SUPERSOFT on 01-861-1166 backward chaining consequent reasoning procedure strategy. In this process you feed in the end-result and the system can check through the rules it has from the then lend to find out the life, that would bring it about - with Suitable probability provisos of course.

Digression #1 Odd things you hear on the radio while partically (is that OK?) writing stuff. ike this. I am at present listening to an LBC discussion on the way expert has become a swear-word in the general opinion of the masses "Expertism is just a lashion" says. Bian Ford, author of The Cult of the Expert We do need specialists in particular disciplines," he says, adding that they should not be bowed down to just because they are experts - End of Digression #1

This way of pulting expert systems together is pretty handy for system builders. The Reparation of the knowledge base from the general-purpose rule interpreter and input data means that the system can easily - wer roughly - be reconliquied by plugging in a different knowledge base. Switching between disks could give you expert advice or investing in property abroad, the structure of aromatic organic compounds, and the ikelihood of tempting the man or woman of your choice into a far from honourable lia.

Okay that a an expert system. But as the proverbial - and on this magazine probably mythica: - nie igent reader has noticed wihave not covered the whole held. 'The human being" this person will be saying "does not we everything lied down to hard and fast regreat rules." And the reader ishould be axist. would have a good point. How else to explain the undoubted fact of people voting for Margarel Thatcher? How could it be that people are happy to read Practical Computing? The answer is luzzy look

Fuzzy Logic

Have no fear computer programmers are grabbing fuzzy logic by its fuzzy throat. The idea is that the expert system can start to the into account the irrationality, unpredictability. and sheer bloody mindedness (is that OK as wer Richard?) of humanity. Once again this is no problem for the programmers to since problem at all to stick some predictable unpredictability into the programs. And I'm afraid that the human's hunches intuition twitches, and aching in the joints if it algoing to rain all come into the pretty predictation category computer percentage-wise

This predictability of unpredictability is the only thing that stops programmers using random number generators and stock phrases like Readers Digest, in supposed expert systems. Fuzzy logic in now respectable, and if it is incorporated in such systems, which can now make the same kind. of guesses and stupid decisions as the rest of

Fuzzy logic is now respectable, and if it is incorporated in such systems, can now make the same kind of guesses and stupid decisions as the rest of us do.

us do But only if the decisions are " based on real information in the respect to my dad and his stamp

Now the odd thing about expert systems that is so easy to implement them on any computer you happen to have tying around and if you are Guy Kewney, that could be one. or . er for every day of the month. The fir ! thing you learn in computing, give or take it is idd thing, ike the method of getting programs. ... d is the if their construction And it is the if then that forms the basis of any expert

 Jem s knowledge base. it structure, expert systems have pretty nilar structures. There is the knowledge base of rules the rule interpreter program, and the Global Jafabase of guestions or assertions this have been asked or made about the area. of expertise. And although boasts may be made about the ger. . . . of the systems so that switching one knowledge base for another would produce a different system, any

...there is certainly a case for regarding expert systems as 'soggy databases'...

specialisation has - own peculiarities Although it is not guoted in the Heral relanguage and largon is one of these peculiar features. It is no use for someone like myself. whom some call aich pitechnology expertianothers can a variety of other things, to ask thew would an ECL leadless chip carrier beat a single chip bipolar microcoded chip ... speed?" unless the rule interpreter and global base used my vocabulary

New Languages

The language the expert system is written in iso has a delinite effect on speed and effectiveness, BASIC although it can be used. # # # filmis application as a pair of sock! to Long John Silver Pasca and LISP the late. i particular tayout te for A research, will not rea ly dole the

though new languages at - ded to represent knowledge in a way that with useful to an expert system. And they are Prophatipative.

 And there are a few fundamental points that will probably - in fact certainly never but solved. The list is that there is a following on it. the brain of a human expert stuff that can never be rule-coded no matter how intensive the interrogation is. The second is that any expert talking to an audience assume: i certain level of basic knowledge. The expert not used to talking down to people as much a he or she must talk down to get the knowledge onto a computer in condescension, it seems as though my University Juliors were an unfortunate - «ception to a general rule

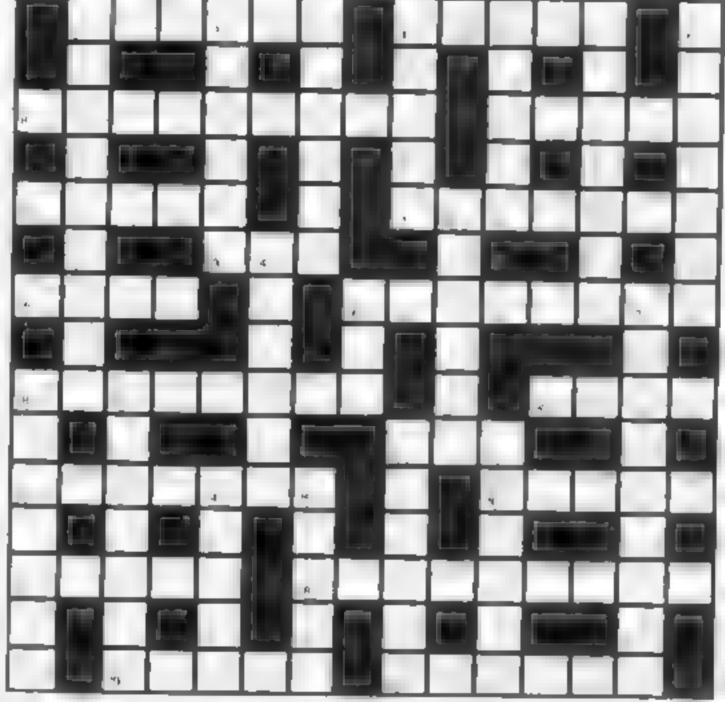
There is a foll going on in expert system. even though most of them are immense programs written in LSP and totally incomprehensible to most micro users. And there is certainly a case for regarding expert systems as 'soggy databases, which is what one commentator called them recently

But the arguments raised by this particular commentator are just the same as those that could be raised about computers as a whole and the objections raised are the kind of trivial that I have not been afraid to raise here. There is a good case. I feel for expert systems to be put in charge of writing all magazine and newspaper ed torial leaders. I would be writing to place a bet that most readers would not notice the difference.

Odd things that experts get up to And as some kind of expert myself in a small way at least. I would like to say that locuidn ticare less. about expert systems. As long as they st can't pick out news stones with success probabilities more than 85%, I can still hang.

To end with Digression #2 a very happy Christmas and New Year to my reader. The rest of you can eat cake. Digression #2 ends.

Conputer Crossword



CLUES ACROSS

- 1. Hands Off! no it's Ed (6)
- 4 & 5 down Maker of "not the BBC micro 5 5
- 8 Pet breeders still despite change of modernames (9)
- 9. Fashionable group a 20 might produce (5,
- 10 Customer jets in program combining (5)
- 11 All back amongst the rest is star like (7)
- 13 Return or escape initially it's fishy (3)
- 15 & 18 across. Being this, the micro gives a good hand shake (4.8)
- 16. Instructions that might be basic (8)
- 20 & 1 down. Press door crow for better text (4.9)
- 21 With elegance Tommy's initial tips might need mopping up (3)
- 23. Asserted to have rewired heartiessly (7)
- 26 Drink around a chip for her (5)
- 27 Sounds dul, but it's handy extension when with mother (5,
- 28 Regulator to mould rota (9
- 29 Flower that spins round for different characters (5)
- 30 Odd or even bit (6)

CLUES DOWN

- See 20 across
- How programs run when not complied (6).
- 3 S y foo in the soil plbow 7
- 4. Operators don't use his commonly if
- 5 See 4 across
- Greek character making LP noise (7)
- 7 Profits n\u00e9eded by subroutines (7)
- 12 Prace of worship with a microprocessor at its heart (6)
- 14 Nervy as it in ght be Sharp (2.4)
- 16. Shy but not quiet copy (3)
- 17 Princess at home with the Rector compiles disk index (9)
- 18 Kind of piotter lying near z lally 7
- 19. Microprocessor and antelope country (7)
- 21. But you don't need to do this to obtain a crock pulse!(4.2)
- 22 Alar ic 3siless gas, about to customize programs (7,
- 24 Hafid a neters (5)
- 25 Display the contents of variable Ellione hears and squal hi

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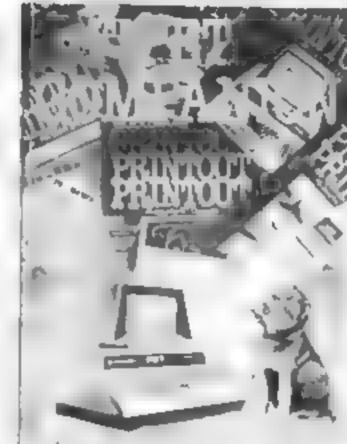
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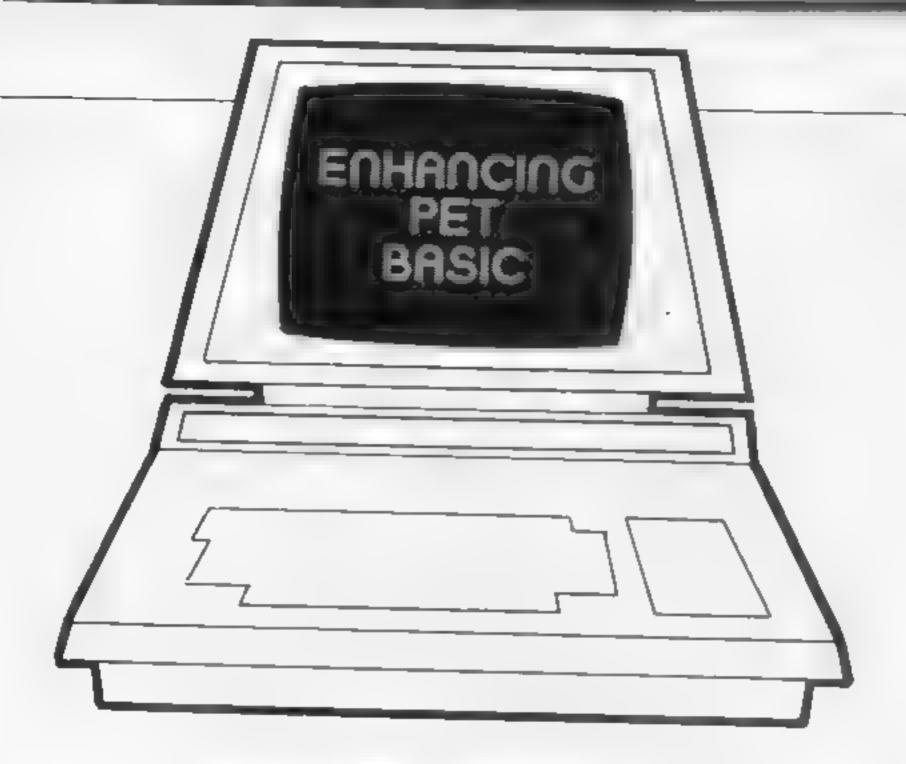
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Dave Wardill and Dave Barrett continue their series – adding new keywords to PET's BASIC.

When the newcomer to file handling has successfully written his files brimming with names, addresses, and every conceivable combination of useful data fields, he finds that his problems are just beginning.

How does he find anything again?

Suppose that he wants to find all the references to someone called Smith which exist in an array which he has called NAME\$. It would be easy enough, if rather slow, to use some code like this

```
100 FOR I=1 TO 1000
110 IF LEFTS(NAMES(1),5)="SMITH" THEN PRINT 1
1. NEXT
```

But what if the object of his search was filed as Smith, or as smith? His code does not allow for upper and lower case letters and so some names might get overlooked.

What if in tials have been used in some cases, and not in others? Then looking at the leftmost five characters will not work, as the 'Smith part of the file will be in the middle of the field not at the left.

At times I ke these, BASIC appears at it's clumsies!

```
200 FOR [=] TO 1000
210 FOR J=] TO LEW(NAMES(I)) S
220 IF MIDS(NAMES(I), J,5)="SMITH"THEW PRINT I
230 IF MIDS(NAMES(I), J,5)="Baith" THEW PRINT I
240 NEXT J
250 NEXT I
```

Now try running it! The search for one name in one file can tie your computer up for hours, without any absolute guarantee of success at the end. If BASIC is your only recourse, then proper file handling is extremely difficult. It may even be more efficient to keep a card index by hand.

Secause of the vast time needed to search for subsets within fields, we felt that a new word was needed

The efficiency of the new code can be seen from this example

```
300 A8 = "SHITH"
310 SEEK A8 IN NAMES(1)
320 PRINT NAMES(PL%)
```

This will search all the elements of NAMES starting at the first element, for any occurrence of the name 'SMITH'. It will report any location of the word, whether in capital or lower case letters or any combination.

It will find the name if it is at the beginning, the middle or the end of a string, and will report accordingly by putting the number of the element where a match has been found into a variable called PL%. If no match is found, PL% contains -1. This can be used in the rest of your program, as the example below shows.

The element at which the search starts can be defined in the example above, the search started at the first element, but this can be varied either directly or under program control. This is extremely useful for finding multiple occurrences of a word.

Example

```
400 P=1
410 A$="SMITH"
420 SEEK A$ IN NAME$(P
430 IF PLX*OTHEN PRINT "NO MATCH"16070 500
440 PRINT NAME$(PLX)
450F=PLX+1 60*0424
```

This starts the search at the first element, and prints out the first match it finds. The search is then restarted from the next element, and further occurrences are found

Spelling

The problem sometimes arises that you are not sure of the spelling of a name. Suppose that you are not sure whether you are looking for Smith or Smythe, for example

The question mark can be used, as it is in other programs on the PET, as a wild-card letter. Judiciously used, any name can easily be found

> 500 A\$="5#"TH" will find both Smith and Smythe in this case.

Speed

How fast is it? Compared with the sort of BASIC program shown above, it must seem infinitely fast. In fact, a full search of a 1000 element array takes about one second. This type of search, where no match is found, obviously takes the longest possible time so searches where a match is found fairly early on, will seem imperceptible. We leave it to you to do your own time trials on your own data, but we will be surprised to hear of any other machine code which is much faster

How To Use It

The example above will have given you a good idea of how to build it in to your own programs. However, there are two jobs which you will have to do first

You can either use this word as a part of the BASIC additions. which we first described in the June issue of MicroComputer

A ternatively, you can use the PET monitor, or EXTRAMON, or an Assembler, to enter the code into memory. We have shown diocated at \$7200. This will make it easy to locate it above the routines for KEYINP and PADINP which we gave you in September, and which are also useful for file handling

If you have a smaller memory PET then you will have to decide where to locate it for yourself. It will relocate without any difficulty. as long as you recalculate the SYS' address

Top Of Memory

The other job which you must do is to cut off the top of memory so that your strings don't get written all over the top of your machine

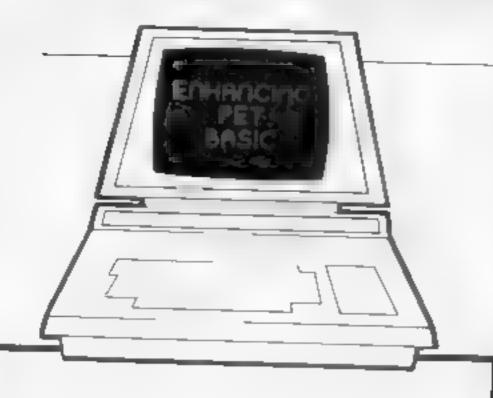
This can be done from within your BASIC program by 100 POKE49, 112: POKE50, 0: POKE53, 112: POKE54, 0 (With a lok PET, change the .1. to 48

flyour are going to use the routine as a piece of machine code to be called by a SYS call then the syntax which would be used in tine 420 above is

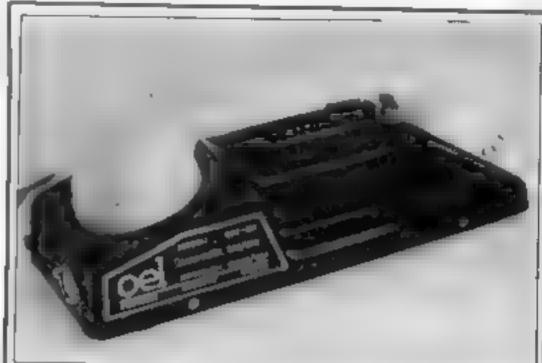
420 5Y8 28672, A\$ IN NAMES (P)

We hope that this helps you to use this useful routine in your own programs. When it is used with the other published words, tike KEYINP PADINP and SORT, it gives considerable power to the PET, particularly when it is used for file handling

```
F END STREET A
         PAS SELF AS N PS 1 HAMEN S AN ADDRESS
         NEW $45 $19295 AT N BS 1
           LAN WE JOSE FOR UNPHONE CHARACTERS
        TA SE OF ME LEC ME THESE ROLLY LINE ALSO DOES AN EMPLOYED TYPE 10
 TAIN A SO IF MAY BRITE IT HOURD FIND
                  DEACHDRITH A
       THE HOLFTHE DOTS NOT DIFFIRMISH SETNEEN STOP AND THEN DO
 T 28 EFFERS SO FIERE & MF PRUM HI FALMAN ME FO ANDM ME HER ALL EP-
     # 17 NO ROLL O 19 FOLIO THEN PLY 16 WH 10 I
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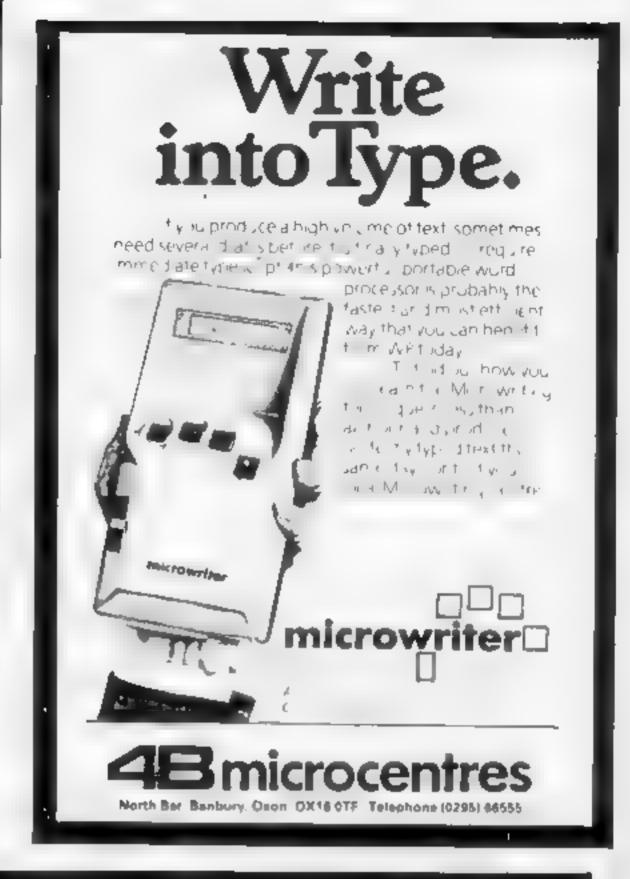
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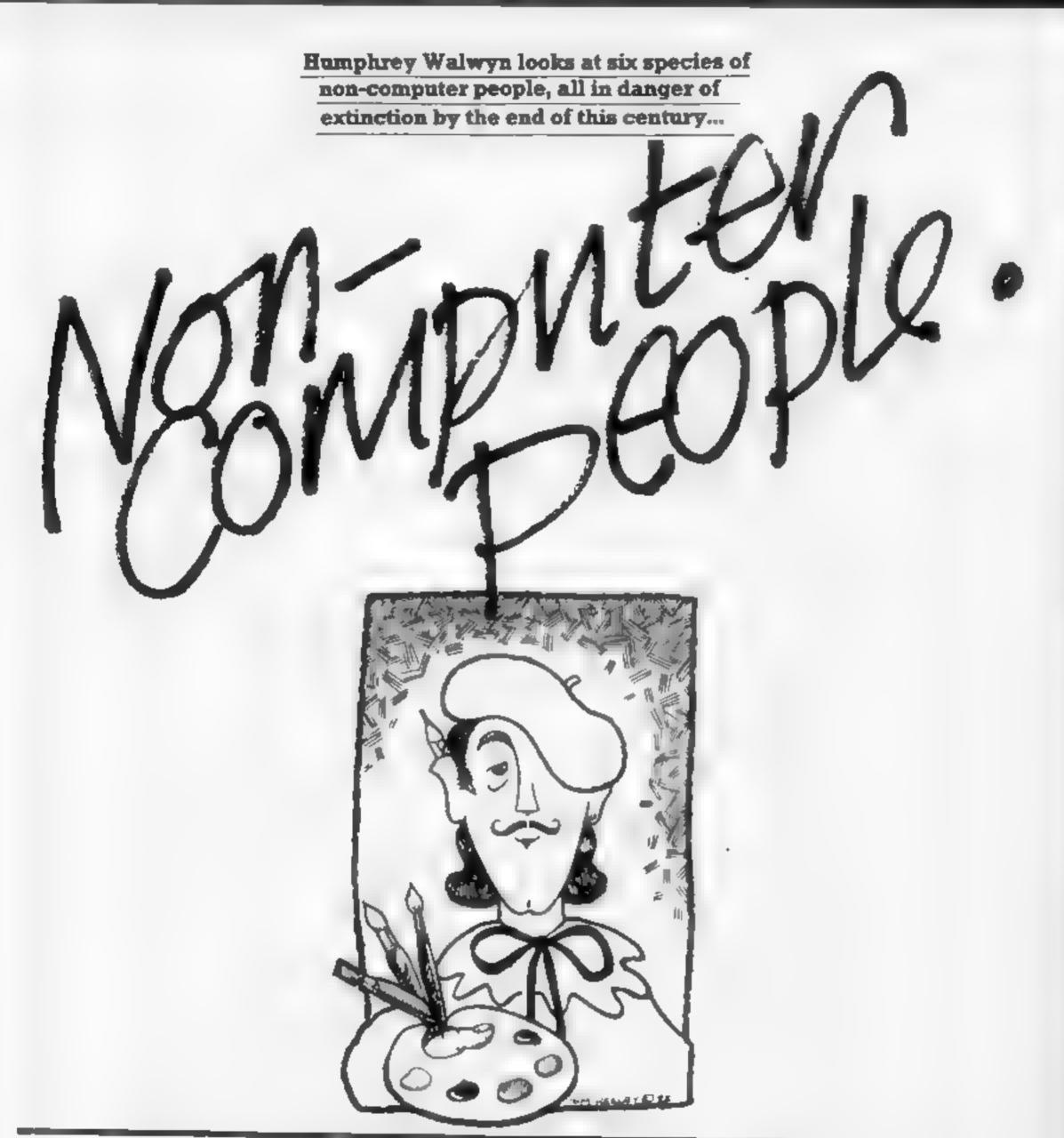
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Endangered Species

As the silicon invasion continues, natural evolution will take place...the survival of the fittest. By 1992, 'ASTEROIDS' will feature in the Olympic Games. Most job interviews will be hold in BASIC but some senior poast will require look at some other species of humanoids who written applications in COBOL. Five star restaurants will print their menus in Pascal and bright young things in lifts will entertain wach other with smutty jokes in machine code providing the Boss isn't "on-line". Computer illiteracy will be no defense to a motoring infringement if all road signs are written in FORTRAN. Worst of all, a failure to be included in DATA banks might result in total

oblivion...er...sorry, WHO?

Last month we looked at some of the new generations of sillcon-bred fauna who are starting to populate the Earth. This month we would prefer to remain based on carbon. The laws of natural selection may well render them extinct in ten years time. They are all 'protected species' and some of them require care, understanding and a preservation order. Others have set their minds so resolutely against any form of change that they don't deserve to survive to the next decade.

Form your own conservation groups now...

SECRETARIA NON-PROCESSOR

Description & Classification:

Normally to be found within the offices of BUSINUS NON-COMPUTERUS, her only electronic aspirations are for a new golf-ba machine. Her sole experience of an office. computer was in 1983 when sheig itched the firm a mailing list DATA all over the pot plants. and the office cleaner removed all known. traces of forthcoming export orders by furning on the hoover at the wrong moment. This traumatic event convinced her the processors. tele-moderns and linkage systems were entirely unreliable. Since that date, life has passed her by Voice-transfer dictation machines and automatic-spelling-erasure type systems may now rule all offices but she would rather handle the paper herself. In her offices, 'Typex' is belter than auto-correction. Good typing is an art to her. She is creative. with a critical appraisal of layout, margins and spacing. "I know everyone processes the r letters nowadays but you can always TELL



when it's computerised, can't you?" She's an incurable optimist 1990's technology is OUT The only silicon product in her office is typewriter lubricant

Rabits:

She often smiles at herself in the mirror. This is because she knows she will never work in a typing pool again. Even the siticon revolution. has brought its own share of Satanic mill labour - typing pool workers now slave over rows of glowing V D L s in a leattering air. conditioned brightness. To join their ranks you must have 4. A levels and a degree in Applied Technology She is happy to be a personal secretary and actually TALK to real people. What's more other people like to talk to HER. Her work-males are thoroughly unattractive. They have all developed 'Green. screen sickness, and stare at each other with square rimmed eyes. They have nothing intelligent to say because they've forgotten. how to speak

Conservation Advice:

Only the best may survive, but there'll always. be a place for good secretaries

NON-LINKED CORNERUS SHOP

Description & Classification:

The owner of this business enterprise belongs to an odd breed. There is a belief going found that people actually prefer to look at the produce on a shelf before they part with their DATACARD credits. Of course it's never catch on since it's so much easier to order your sausages and instant Coq-au-vin fromm the home video display. Heavens, if people could examine the produce BEFORE they purcessed it them they might not buy it at all, and that a bad news for the international food distribution agencies!

Back up by this belief, NON-LINK CORNERUS SHOP still survives. He she works extremely long hours (long into the afternoon!) while the rest of us view STARWARS 23 on our videos after a hard workingh 25 hour week. What a in it for them? Well their habits give us a clue

Habits:

They are friendly people and converse with their customers ("Hullo, yes certainly, which one would you like?" etc.) This means they probably derive satisfaction from meeting other human beings. Some customers are bewildered by this and tend to withdraw into their salicate shells (their home-computer link doesn't talk back as and EQUAL). Normally a shopping is conducted via the cable link or in enormous marketing halls were electric truckettes convey your choice automatically to the check-out desks. The markets are proud of the pact that "No Human Hand is involved" and - to stop heart attacks - no customer need ever see the bill since a voice. synthesiser checks the credit account with an impersonal - "Triank you and Have a Nice Day" The idea of 'Not being on-line is strange. But it's quite nice when you get used to it.

Conservation Advice:

Market economics will continue to threaten. their surviva, but if there s a demand then no when a mains failure wipes my DATA CREDIT where am I going to buy half a dozen eggs at 6 00pm?



Habits:

He is frequently harrassed and over worked There just isn't the TIME to worry about the commerce, competition. Being pre-occupied. with sub-totals that don't add-up, he spends many hours trying to find out where the missing. ligures went. Much of his life is dedicated to the worship of paper and he smiles upon rows of box files. He is neal, careful and tidy. and insists that the ledgers are works of art as well as detailed records of any transactions. Happiness is a pile of date-stamped invoices. There s only one thing that makes him laugh. out loud

"Ha! Told you so! Their wretched computer's up the creek again!

Conservation Advice:

Unfortunately his chances are not good. UK. paper postal deliveres ceased in 1988 owing to a lack of demand. Advice notes are out tele-involcing is in Since he shot on line", no one can give him new orders. He s ike a doomed ostrich burying his head in reams of A4

COMPUTERUS SUMBERS - MON

Description & Classification:

An eithst species of commercial traders whose financial status is increasingly dominated by the law of diminishing returns He/she still believes that the personal approach is good for business and maintains that "Good old Jenkins in accounts (who has been with me for YEARS) is far more reliable. than any dame machine!"

Basically suspicious of anything electrical he keeps a treasured mechanical adding machine in the office ("The Exca. bur 50" years old and still works like a dream") but has at least allowed a friend to buy him a calculator for his audits. ("clever people" these Taiwanese") He wears a watch with real hands on it and his proudest possession is an eight day' desk clock that his secretary rewinds with religious fantacism at 9 30 am every weekday (NB A clock' was a predigital spring-driven time-piece requiring manual winding)



CONSUMERUS **NON-ELEKTRONIKUS**



Description & Classification:

Can easily be recognised by the facthershe has never been known to purchase a battery They look perfectly normal are basically normal and live in perfectly normal homes EXCEPT they don't have a television 1990 s.

society has ostracised this strange breed

despite the enormous technical drawba in being unconnected to the national cabnetwork - they have religiously opposed . scientific advances and even give their children BOOKS to READ as presents Naturally this is against the law. Books are "unsuitable learning aids as they don't allow personal expansion" Books are simply R.O.M. Read Only Material). R.A.M. is what counts nowadays. Interactive electronic education is the norm. Whast the classroom is into "higher symbiosis", THEIR children are into Bronte and Dickens Who? Ed This whole species is a suitable case for treatment.

Habits:

Very strange. Since they don't have an interactive terminal at home, they have to do all their own shopping in the few shops that still cater for the personal buyer. They even go out for their entertainment to the few remaining cinemas, concert hairs (to hear "live" synthesisers) and restaurants (not the ones with PASCAL on the menu). The rest of us of course have everything shoved down a line to our homes. What is the point in watching. a "live" lootbay match when you pay for it on TV? Besides which, it's cold outside! Other strange habits include playing games of cards (a manual pastime involving bits of coloured plastic) and writing letters by HANDIII Gel this for a laugh. They even play chess with EACH OTHER!! Pitiful, pitiful

Conservation Advice:

Frankly it's difficult to see how this breed has survived so long. There is no need to slap a preservation order on them. If they re so resolute, they il survia of their own accord-Poor people they just don't know what they re missing!

ARTETICUS **NON-COMPUTERUS**



Description & Classification:

This species is part of a rapidly vanishing group. In the early 1980's they were known. under various headings. "graphic artist" painter" "cartoonist", "design sepcia ist and "layout artist

Nowadays there are so few of them left that

conservation orders alone are responsible for their survival. Some of their work can still be seen behind the electrified fence and 3. metres of securo-giass' at the Tate Gallery all the rest of our cultural heritage was put on video and the originals sold to texas in 1987 to save the UK national software debt ARTISTICUS NON COMPUTERUS can be recognised by the ink stains on the hand Yes, amazingly they still use things like paper pens and fell hips. Along with MUSICA NON. SYNTHESA, both species are part of the endangered classification CREATIVI INDIVIDUALI. Their survival became in doubt in 1987 when the Arts Council' (as it was known) ran out of funds and was replaced by a chip. An operator error subsequently turned the National Theatre into a gigantic DATA storage complex (NB 'Theatre was a strange form of

Many of them feel resentment since their training and talents are mostly ignored by the video society. When holographic synthesis replaced stage design, computer graphics did away with creative layouts and paints were considered un-safe for children, lots of people lost their jobs. You can still see some of them scribbling on the silicon side-walks The artwork may be crude but it isn't surprising when you consider it's actually drawn BY HAND! Some of them eak out a living sketching other human beings. Of course, the result isn't a paich on modern photo-grafix but it can be interesting

entertainment using REAL people)

Conservation Advice:

If only weld thought about it in 1985! Once imagination was replaced by automation, no one was creative enough to remember what creative art was all about

MUSICA **NON-SYNTHESA**

Description & Classification:

Mostly recognisable from what they are carrying. These are strange shaped objects. ranging from feminine forms wrapped in brown canvas to small black boxes (not uniike porta-moderns but minus a V D U 1 They were first threatened by the advent in the early 1970's of the single keyboard. morrophonic synthesiser but since the unit could only produce electronic twanging noises, creative musicianship was not threatened. In the 1980's, however polyphonic music music synthesis became more developed and if became possible for a single machine to sound remarkably like an entire string section. It may seem strange today - what with our multi-synth modules and home operated music-processors - but there really was once a time when music was played on instruments by individual musicians. Popular music was performed by groups of 4 or 5 musicians instead of just one Classica music often involved orchestras' - collections of 40 or more people ali playing together

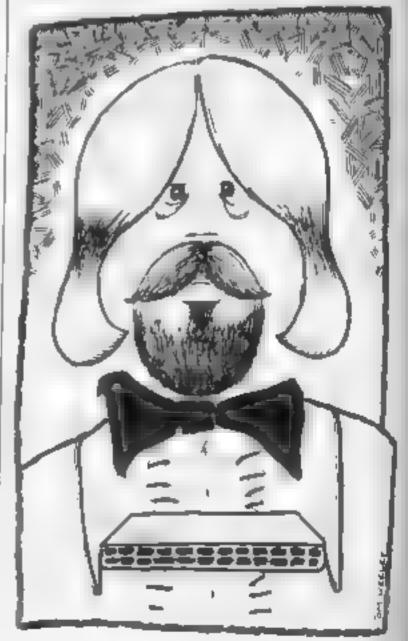
Wer it just couldn't last. When the record companies turned over to video antertainment. in the mid 80s, "live" music became a thing of the past. Nowadays, the star on "Top of the Pops is a programmers with his box of chips. The classics are digitally encoded by technicians and replayed with total precision. down cables to every home. Not a note is out. of place and the tuning is clinically perfect How lucky we are!

Habits:

Although it's illegal, they tend to practice secrelly at home. You can still see them. occasiona ly busking on street corners (dogive em a 10 pound coin or two) or playing at children's parties (the kilds think they rehighly amusing!).

Conservation Advice:

Along with other CREAT VI IND/VDUALI it's a bit ale now. We should have done something about them in the mid 80s. We may have perfect music in the '90s, but it all seems to sound the same. Real music must have been different and fun



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The way to become proficient at anything is to study the form of the experts. Chess is no exception. This month Bob Chappell has developed a top quality program that allows you to key-in, store, replay and

CHESSMATE

randmasters always recommend studying the games of champions to improve your own play Playing through such games, one can try to observe and get inside the mind of the champion, testing out and expenmenting with the various lines of play that present themselves during the course of the game

analyse chess games.

Chessmate has been designed to be an aid to such study and experimentation, as well as a convenient way of permanently storing, retrieving and replaying favourite games. Although written on a Pet, it should not be too difficult to convert it for most other micros, the graphics being fairly straightforward

The program commences by presenting you with a menu

Build a game.

Replay a game stored in memory

Read a game from tape

Write a game to tape

List the stored moves

Replay the sample game

Display the instructions

Full instructions on using all the program's facilities are obtained by selecting option 7. I shall not go into them in any depth here, you can read them from the program listing, lines 1950-2950. Entering moves is by normal algebraic notation Queening, en passant and castling are all catered for and you can set up various board positions at any stage by adding, removing or replacing pieces anywhere on the board

Using the above facilities, as well as normal moves, you can build up a section or a complete game in the computer's memory for later saving to tape (conversion to disk is very simple). You can cancel a wrongty entered move (provided the Return or Enter key has not been pressed) by typing the hash symbol. The end of a game is signified to the program by the entry of four asterisks in place of the usual entry

Before playing a game one must either have built up a series of moves in memory or have read in from tape a previously



fixed game, simply select option 6 on the menu. You might wish to permanently re place this game later with one of your own favourites. The data statements at lines 3050-3090 contain the moves for the embedded game

When replaying a game, you can either single step through it, allowing you to study each position at your leisure, or in struct it to progress automatically, moves taking place with no delay. You can switch between modes at any time. The current move is displayed in highlight at the bot tom of the list column before being trans ferred to the list of the last 17 moves (this list is continuously updated so that the last 17 moves are always on display). The piece being moved will flash on the chessboard, both on its originating square and destination square. You can leave a replay at any time by pressing M to return to the menu. You must also press M when the replay is complete

During a replay, you may jump around | Printout'

embedded in the program. To replay this the replay as if the game had already reached the 77th move (the board position will reflect this) Similarly, JO will start the game from the very beginning. You can jump backwards and forwards at will

You may also interrupt a replay by typing B, when you will be placed in Build mode. Entering moves from this point on will allow you to build up a game from the point where you interrupted the replay This can be quite useful for trying out different lines. You may prefer to save the original game before doing this as the moves added from the point the game was interrupted will destroy all the following original moves

To see the complete list of moves in the computer's memory at any one time

select option 5

I hope you find the program useful and fun to use. Who knows, out there some where we may have a budding Bobby Fischer who in later years may claim that he owed his success to MicroComputer

	PROGRAM OUTLINE		
60-260	Get move stored in memory		
270-330	Get move from keyboard		
340-400	Test for end of game		
410-610	Handle castling		
620-660	Moving piece from a square		
670-710	Moving piece to a square		
720-820	Handling a Substitution of pieces		
830-840	Board update		
850-880	Queening a pawn		
890-970	Castling		
980-1000	En passant		
1010-1100	Move validation		
1120-1240	Message and move-list display		
1250-1510	Initialise		
1520-1650	Menu		
1660-1930	Build, read tape, write tape, replay		
1940-2990	Instructions		
3000-3090	Sample game		

MAJ	Larry Direct	40.00	20 P. A	 -
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B(8,8)	Board positions		
P\$(17)	Graphic piece representations		
MV\$(150)	Move store		
TM	Total moves		
MT	Total moves so far		
Кb	Set to 1 for automatic replay,0 for single-step		
K8	Set to 1 if move coming from keyboard		
V VV	Value of the piece		
TR.TC	Row and column position of the piece's destination		
FR.FC	Row and column position of the piece's original square		
B\$ B1\$	Graphics for empty squares		
GI	Set to 1 if game in memory		
	Set to 1 if error detected		
CS,PS,XP Casting en passant and exchange indicators			

The program occupies some 11k. Can be reduced by removing instructions and embedded game Chessmate has been written for a Commodore PET but can easily be converted to run on other machines. Main points to watch are the graphics symbols used which may be different on your machine

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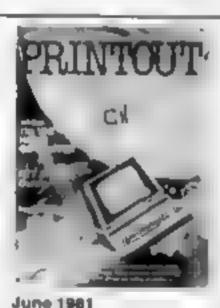


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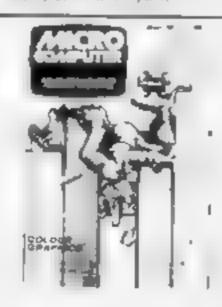
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CHESSMATE

(Editor's Note Bob Chappell has offered to make available recorded copies of Chessmate or any other of allable recorded copies of Chessmate or any other of allable recorded copies of Chessmate or any other of allable recorded copies of Chessmate or any other of allable recorded copies of Chessmate or any other of allable recorded copies of Chessmate or any other of the same of Chessmate or any other of allable recorded copies of Chessmate or any other of allable recorded copies of Chessmate or any other of allable recorded copies of Chessmate or any other of allable recorded copies of Chessmate or any other of allable recorded copies of Chessmate or any other of allable recorded copies of Chessmate or any other of allable recorded copies of Chessmate or any other of allable recorded copies of Chessmate or any other of allable recorded copies of Chessmate or any other of allable recorded copies of Chessmate or any other or allable recorded copies of Chessmate or any other or allable recorded copies of Chessmate or any other or allable recorded copies of Chessmate or any other or allable recorded copies of Chessmate or any other or allable recorded copies of Chessmate or any other or allable recorded copies of Chessmate or any other or allable recorded copies of Chessmate or allable recorded copies or allable record

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As everybody knows senior managements generally are technologically illiterate. As everybody also knows senior managements do not read. And, whatever they do, their attention span is imited. It was recorded in a famous management lextbook of the sixties that the average length of time a senior manager will spend on his own in any one day uninterrupted by the telephone, is twenty three minutes. and that is to answer the mail

•

I is part of the skill of senior management to recognise a good idea when it finally sees one, and action it. But, naturally enough, not all ideas are good ideas, and sometimes when they are technology based, senior management cannot really tell the difference between a good idea and any old idea, and acts on the second. Which led to one bruised DP manager to come up with "The History of a Typica, Project."

- 1) Conference with cocklass
- Uncritical acceptance of everything
- Wild enthusiasm and unlimited expenses
- 4) Seeds of doubt
- 5) Disclusionment
- 6 Tota confusion
- 7) Search for a scapegoal
- 8 Presentation of specification
- Pun shment of the innocent
- Agreement of terms of references
- 11 Promotion of the non participants
- 12) Maintenance by the conscientious
- Proposals for radical restructuring.

At which point no doubt one goes back to the start and begins again. All of which - also no doubt - accounts for that basic law of system's creation. "It costs more and it takes to more."

The Japanese seldom make computerjokes indeed there are few such jokes outside the USA, the UK and France. Almost everybody else it seems lacks our sense of humour Except—what follows is the only genuine Russian computer joke I know. I can vouch for its genuineness, it was told to me by that pillar of the Russian computing establishment, Academician Dorodnycin, over dinner back in 1968, when he was in charge of Russian computing s external relations and responsible for hegotiating Russia's computing technology exchange agreements.

The Cybernetics Research Institute in Moscow after many years of research and development came up with a cybernetic weighing machine. It was the ultimate in machines if not only spoke your weight, if did so in your own language, even without you ultering a word. And what is more if also gave you dieting instructions.

The Institute's scientists decided that the best place in which to do their development trials was Moscow International Airport. The machine was taken out there, and installed in the half just outside 'Arrivals', while the scientists went up the the gallery above to observe

The Arrivals Hall is large and marble floored Find a marble floor in a public place in Russia and you will had a babushka, an old lady with mop and rags permanently cleaning. The job is like painting the Forth Bridge, it never stops

A plane landed, and eventually the passengers started to incide out. The first to spot the machine was a plump Italian lady. She went and stood on it, there was a two second pause, and then the machine spoke in beautiful and clear Italian, "Your weight", it said, "is seventy two kilos. This is four to sax kilos above what you should be for your size and frame. I suggest that you knock off the pasta"

The Italian lady was quickly followed by a Frenchwoman. The machine was much kinder to her. Again there was a two second pause and then the machine spoke in a flawless. Parisian accent. "Your weight is exactly what it should be for your size and frame", it said. "I suggest that whatever it is that you are doing you should continue."

The babushka had been observing this out of the corner of her eye. The hall cleared, and, being unaware of the scientists in the gallery, the babushka after taking a careful look around to see that she was not observed, went and stood on the weighing platform.

The two second pause came and went it stretched out to a five second pause. And then a ten second pause. The machine was pondering. And then it spoke fluently and plaintively in Russian. And said, "Would one of you please get off?"

243

Finally we come to FLOG (1). I found this on the administrative office door of the computer centre of the International Institute for Applied Systems Analysis just outside Vienna earlier this year. They are UNIX users, which ligures as this is a UNIX joke it needs to be read slowly savoured, and then read again. It is one of those jokes which slowly creeps up on

NAME

flog speed up a process

YNOPSIS

flog [1n] am] [u] process id

Dt SCR PT ON

Flog is used to stimulate an improvement in the performance of a process that is already in execution

The process (d is the process number of the process that is to be disciplined

The value *m* of the 1 keyletter argument is the flage ation constant eithe number of *lashes* to be administered per minute. If this argument is omitted the default is 17, which is the most random random number.

The presence of the 'u keyfetter argument indicates that flog is to be unmerciful in its actions. This null fles the effects of the other keyletter arguments. It is recommended that this option be used only on extremely stubborn processes, as its over-use may have detrimental effects.

Flog will read the file /have/mercy for any entry containing the process-id of the process being speeded up. The file can contain whatever supplications are deemed necessary, but of course these will be totally ignored if the unkeyletter argument is supplied.

SEE ALSO

On Improving Process Performance by the Admin stration of Corrective Stimulation CACM vol 4 1657 pp 356-654

DIAGNOSTICS

t a named process does not exist flog replies. "flog you" on the standard output if flog kill (1)s the process which usually happens when the unkeyletter argument is supplied it writes rip." followed by the process-id of the deceased on the standard output

BUGS

Spurious supplications for mercy by the process being flogged sometimes wind up on the standard output iralher than in shut up

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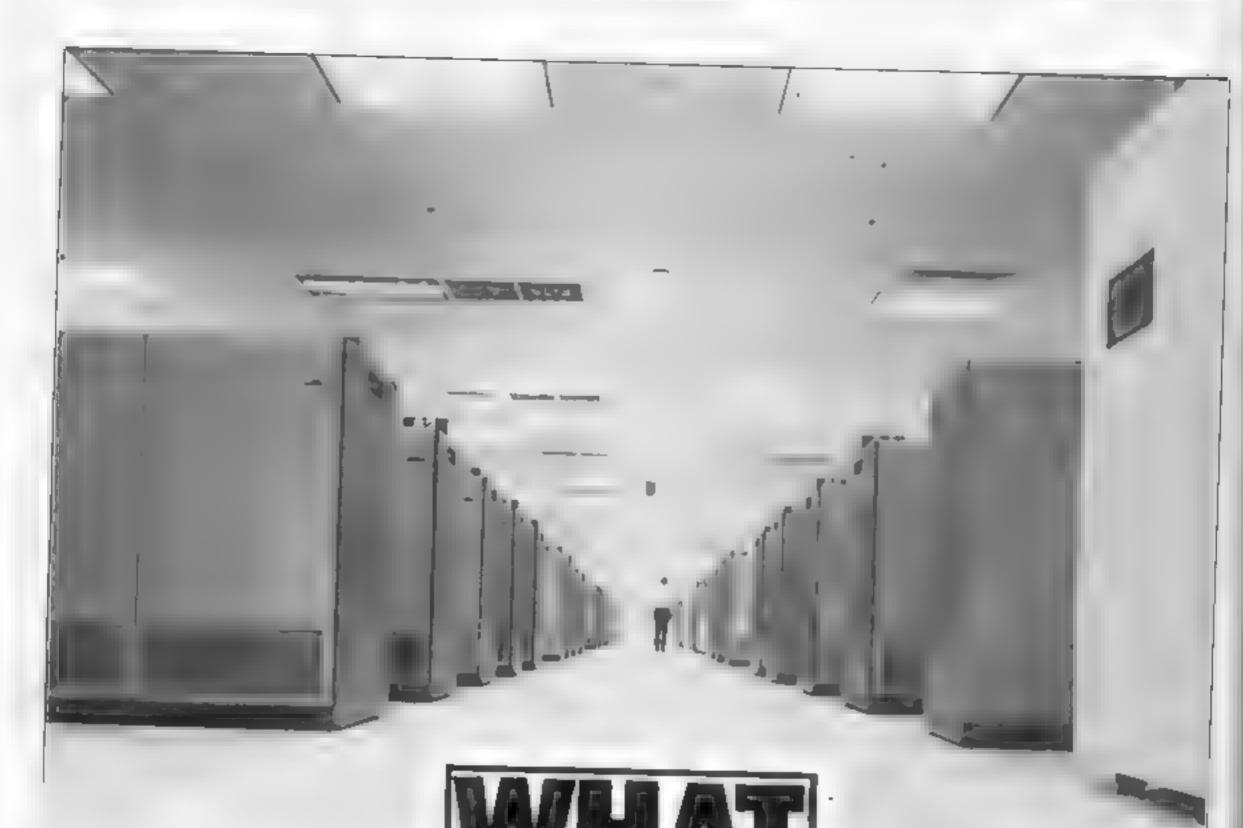
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- 4 & 5 down. Uncle Clive
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 - Noodle
 - 4. Users
 - 6. Epsilon
 - 7. Returns
- 12. Temple
- On edge
- 16. Coy
- 17. Directory
- Flatbed
- 19. Iceland
- 21. Wind up
- 22. Tailor
- 24. Radii
- 25. Dumpy



The nucrocomputer industry is still a fairly young one; less than 10 years old. The personal computer boom which is now enjoying such publicity is younger still, being started to all intents and purposes by the launching of the Apple and PET in the late 70's. With the introduction of really useful nucrocomputers (mentioning no names of coursel), it is now patently obvious that there is a lot of money to be made in microcomputers, not just for a few large firms such as Commodore or Microsoft, but for small British firms as well. This has meant that a large number of people have been attracted to the industry, in the hope of making their fortunes. Most of these were existing, well-qualified computer experts from minicomputer and mainframe installations. Unfortunately there were (and still are) plenty of sharks, either incompetent or just plain negligent, and some of these people gave the infant some very bad publicity

On the other hand however, there are a large number of newcomers to computing who, attracted by the low cost of a personal computer, have bought one either for their own interest (or their children's!) or to help them run their businesses, and have taught themselves how to program the machine from scratch. It is to these people in particular, but also to everyone connected with microcomputers, that thus article is addressed. The problem is that many microcomputer people seem obsessed with remventing not only the wheel, but also all the skills and techniques which have been built up over the past thirty odd years by many thousands of often brilliant research staff in universities and manufactuers' R & D departments worldwide. The purpose of this article is to point out some ways in which microcomputers products, both hardware and software, fall down, and to try to encourage people to use

information which is readily available in trade journals and public libraries. Some of the comments are obviously aimed at manufacturers and retailers, but customers should read these as well, because they can then check up that their suppliers are giving the service they should.

Lurid Covers

Too many people, professional and hobbyist, seem to be airaid to use the many excellent textbooks and periodicals on computing in bookshops and libraries. While glossy paperbacks with birid covers entitled "Better BASIC for your BLIMP", and "Learn how to program the CRIMP in assembly language" may be fine as introductions to computing, remember the quotation from The Merchant of Venuce: "all that glitters is not gold". If you move from the "Microcomputer" shelf in the bookshop to the general "Computing" you will find many books in plain covers which will give you a lot of information on things such as structured programming, algorithms and so on, which are not as difficult to understand. as you might think. Of course a bit of thought as required, but honestly it is worth it.

If you think you can get by just learning a language without any of the other techniques, remember the story about the proverbial nine-stone weaking who bought a Charles Atlas bodybuilding course to build up his muscles. However he couldn't afford the whole course, so he just bought the chest and arms section. Inside 6 months he had 18 inch biceps and a 44 inch chest, in fact he looked just like the Editor does in that funny mirror he keeps behind the filing cabinet. The trouble was that the still had his skinny little legs, and one day he was running for the bus and they both collapsed! (Pause for laughter to die down). The point of the story is that if you should aim for an all-round knowledge. If you build up just one side of your computer expertise, you are really missing out

Program Planning

But there is more to programming than learning difficult algorithms and keeping up with the latest mathematical methods. Many people just have an idea for a program, say a diary program, and then sit in front of a computer and key in the first thing which comes into their heads. However, if you are intending to write senous programs, even if purely for your own use, you cannot go about it like this. You must first of all plan what the program is going to do, how it is going to need, what what information it is going to need, what

If you build up just one
side of your computer
expertise, you are really
missing out!

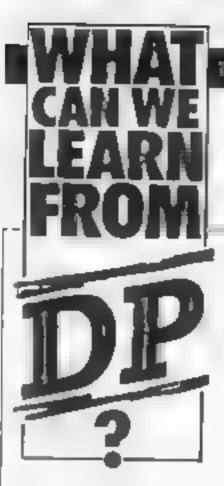
"Big computers are Bad computers" this statement is typical of the attitude of many suppliers and users of Microcomputers. But the mainframe industry has been established for nearly three decades, and has learnt many lessons which the Microboys are only just discovering. Chris Preston maintains that we ignore their experience at our peril

output it is going to produce, and so on. Draw up flowcharts, file and record layouts, screen and printer layouts. When you start to write the program, make sure it is well documented. If you are writing in a structured language (which to my mind includes assembler) there is no excuse for explaining in the program text what each variable, program segment and subroutine does. If you have been programming for a while you will build up a library of rounnes which you use a lot. Put them on a separate "library" disk where they can be copied into your new program as required, and document them. Make out a chart for each subroutine saying what it does, what input it needs and what output it produces, what variables are used, and if written in assembler, which reguters and flags are affected. If the workings of the routine are particularly complicated, make a note of how it works, because you can bet your shirt that when you come back in a year's time to use the routine in another program, you will have forgotten how it works

This is not really the place to go into structured and modular programming techniques, except to say that they are very useful. However with so many micros now having chaining commands of one sort or another, and those which don't being well supplied with patches to allow chaining, there is no excuse for mammoth programs, which should really be split down into manageable churks. Apart from making the programs easier to test and update, small BASIC programs run much faster than large ones, because of the way interpretive BASIC works. How many people write special programs to test their programs? In general, municomputer and mainframe installations have a much more rigid attitude to testing than micro people. Programs are written in small blocks, each of which is ngorously tested by specially-written test programs before being connected to other blocks to make up the full program Special test data is produced to test the program, in three stages. First, special test data is produced to allow the programmer to get the program to work at all. Secondly data is produced which will concentrate on parts of the program which are considered "risky", such as the part of the program which closes a file when it is full and opens the next, and exercises all the error-testing parts of the program. Lastly random data is produced which gives the final test to the program before it is given a clean bill of health

Customer Support

Especially glaring are the shortcomings in the business sector of the nucro industry. Leaving aside such things as poor quality merchandise and rogue.



dealers who don't support their customers once the cheque has been cashed, there are still many things which the nucro industry can learn from its big brothers.

First of all data integrity. There is more to data integrity than telling the customer to copy a disk after changing a file. Disk drives are not perfect, and the way a program operates can dramatically affect the possibility of a data corruption, and also how serious a corruption is, whether it just affects one part of the file or means that the whole database has to be written. off. Similarly, there is more to backing up disks than copying a disk whenever it is written to. The ideal system for an on-line computer application consists of three disks: a grandfather, a father and a son, which are used in rotation. Two disks

The ideal system consists of three disks: a grandfather, a father and a son.

alone are not enough, because Sod's law says that the disk will get corrupted just before you copy it, so you now have two useless disks! In addition, if you are running a monthly system, say a ledger or payroll, you should have archives from before the previous "month end " procedure. For a batch processing application a possible backup system is just to keep a copy of last months master file, together with all the transaction files

If your current master file becomes corrupt, you can recreate it by running the transaction files against the master file. The recreation process may be slow. but there is no time wasted in backing up a large master file at the end of each day's processing

Talking about backing up. I think that selling a fixed hard disk system without any method of backup is like selling a car without brakes, and backing up 20 MB of hard disk onto a series of floppy disks is no system worth talking about, A fast tape system does not cost too much, and may save a disaster

Andit Trail

One item often neglected on nucro business systems is the audit trail. A meaningful audit trail is an invaluable aid when you need to trace a payment to Floggst & Run Ltd. and the VAT man is sitting at the other end of the office with that disbelieving look they seem to cultivate. Businesses should not complain about the cost of paper; again think of a car without brakes.

Another way in which the micro industry could learn from the mini market is in the question of customer relations, which does not man going out with all the dishiest customers for meals in expensive restaurants. It means spending time with the customer finding out exactly what he needs, and explaining how you intend to provide it. It means educating him, if he is a newcomer to computing, into all the little tricks which make an installation run smoothly, such as not pouring coffee into the keyboard, always putting diskettes back into the envelopes, keeping proper records of all the operations of the installation, clearing disk head, and taking backups. The business of backups is too often skated over by salesmen who are obviously keen to stress the reliability of their equipment, but it is a good motto

...selling a fixed disk system without any method of back-up, is like seiling a car without any brakes!

always to expect that the worst will occur Apart from anything else, what does happen cannot be as bad as your Imaginings!

Customer relations means making sure that more than one person at the customer site knows how to work the machine because if only one person can, you can bet your life that they will be off sick or out of the office when there is an emergency and then who is going to get a frantic phone call??? Finally, customer relations means taking care of the customer once he has bought the product. been trained how to use it, and got on to work with it. He is bound to have problems: problems of understanding. wanting to do things which maybe cannot be handled by the current version (in which case you want to make a note so that the next release can cope with it), and even (heaven forbid) breakdowns and bugs

I can see in my mind's eye thousands of retailers throwing up their hands in disgust. "We can't do all that - we need all our profit margin to pay for the aftersales support" The point is that the more pre-installation support you give, the less you will need to allocate for afterinstallation support. Also, the more

Businesses should not complain about the cost of paper... remember the car without brakes!

support you can give the customer the more likely he is to come to you for more equipment in the future. An aside for customers though. Please don't waste peoples time. If you have a query, get all your facts straight before phorung for help. Are you sure it isn't in the manual? Phoning your supplier is like phoning the police: they are there to help, but if you phone for no good reason and waste their time, you will not be welcome.

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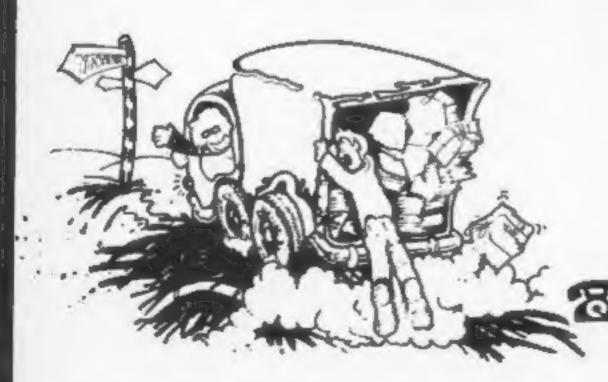
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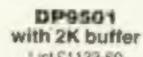
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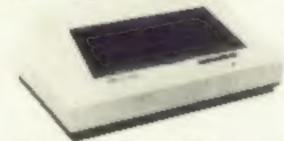
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INSIDE TRADER

A call from my old friend, the Lord Chamberlain. Who amongst micro persons should receive a gong in the New Year's honours? Sir Chris Curry has a certain ring to it, I muse. Alas, it seems Her Majesty was not amused by her five month wait for a BBC machine. So 'Arise Sir Clive' it is then.

I eagerly await IPCs forthcoming seminar on Micro Mortality. Contributions include Clive Sinclair on Self-Effacement Martin 'Legless' Banks on Sobriety, Jon 'Little Genius' Baldachin on Modesty, and David 'Exocet' Low on the subsject of Tact. I had also looked forward to hearing Guy Kewney on How to Win Friends and Influence People, but it seems he has a prior engagement.





Martin 'Legless' Banks

The estate of the late Charlie Chaplin were unamused to discover that IBM were using the little tramp to advertise their personal computer. The company have apologised, explaining that Micky Mouse had been unavailable.

The days of the respectful error message may be over. As his contribution to humanity, Jeff Shrager of Carnegie-Mellon University has developed a program that is made for you. This A I routine lucks unseen in the operating system until the aprogrammer makes a bog of things. "Then It is really obnoxious," he explains helpfully.

I am happy to give the lie to the mischievous suggestions that Commodore's 8000 series PET is absolete and unsuitable. Whiy only this week I encountered an 8032 application at the very forefront of technology. Lavatories at Reckitt & Coleman's Stonelang laboratory are flushed by a CBM 8032

Another beezer wheeze from the innovative Desperate Dave Tebbutt. The essence of this imaginative scheme is that his Caxtron Software company will give programs away tree. "It could be a real money-spinner" he enthuses.

Determined to avoid a Koo Stark-style situation, ACT stipulated that the acress in their Sirius TV commercial should never have modelled nude. Chairman Lindsay Bury's reaction to the lovely Toni White's subsequent appearance on page 3 of the Sun is not recorded.

I congratulate Commodore's body building commandant, Bob Gleadow on the successful implementation of his new management strategy, 'Dynamic Tension'. So dynamic is the tension now at Chateau Commodore that half the senior management are seeking alternative employment.

Hope of a gastronomic adventure as the guest of Atari's gourmet new M.D. are dashed by a succession of unappetising dishes. Raising the matter with a functionary I am told "Too right, squire. I bring sandwiches and I'm the chef.

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